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IN THE 1132

United States Circuit Court of Appeals

For the Ninth Circuit

BUTTE & SUPERIOR MINING COMPANY, *Appellant,* vs. MINERALS SEPARATION, LTD., et al, *Appellees.*	No. 3081

SUPPLEMENTAL BRIEF FOR APPELLEES.

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IN THE

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For the Ninth Circuit

BUTTE & SUPERIOR MINING COMPANY, *Appellant,* vs. MINERALS SEPARATION, LTD., et al, *Appellees.*	No. 3081

SUPPLEMENTAL BRIEF FOR APPELLEES.

PARTIES, PLEADINGS AND PROCEEDINGS.

Parties. The appellees, plaintiffs below, are Minerals Separation, Ltd., a British corporation, the legal owner of the title to the patent in suit, Minerals Separation American Syndicate, Ltd., a British corporation, owner of a residual right to profits and damages for infringement up to October 10, 1913, and Mineral Separation North American Corporation, a domestic (Maryland) corporation, owner of the entire beneficial interest in the patent in suit and all rights to profits and damages other than the residual interest of Minerals Separation American Syndicate, Ltd. The appellant, defendant below, Butte & Superior Mining Company (formerly Butte & Superior Copper Company, Ltd)., is an Arizona corporation having an established place of busi-

ness in Butte, Montana, where it has committed the acts of infringement complained of.

Proceedings Prior to Trial. Suit was commenced on October 10, 1913, with Minerals Separation, Ltd., as the sole plaintiff, and proceedings for a preliminary injunction immediately taken on an order to show cause issued October 11, 1913. This proceeding was heard on November 4, 5 and 6, 1913, and resulted in an opinion filed November 14, 1913, followed by an order entered November 14, 1913, denying preliminary injunction provided the defendant filed a bond in the sum of $75,000, and stipulated not to enlarge its use of the process beyond its present facilities, and filed monthly verified statements setting out the operations of its oil flotation plant, in default whereof a preliminary injunction would issue upon the filing by plaintiff of a bond in the sum of $125,000. This order was modified by a further order entered November 15, 1913. The defendant filed the bond and stipulation, and has filed monthly reports.

At the hearing on the motion for preliminary injunction the pleadings and proceedings in the suit of Minerals Separation, Ltd., and another against Hyde were offered in evidence in behalf of the plaintiff, and at the suggestion of the defendant were received in evidence for all purposes in all proceedings in the present suit. This appears in the Record (Vol. 5, p. 2206*) and was followed by a formal offer of evidence of that Record at the trial (pp. 2211, 2212). The Hyde Record in the

*The references in this brief will be to the printed Transcript of Record unless otherwise noted.

Unless otherwise noted, bracketed portions and italicizing in quotations will be ours.

District Court is reprinted in the present Record (Vols. 2, 3 and 4) including its index (Vol. 3, pp. 3-14). The mandate of the Supreme Court in the Hyde case is in evidence (Vol. 1, pp. cxi-cxiv) and the final decree thereon (pp. cxviii to cxx).

Pending the decision of the Supreme Court of the United States in the Hyde suit the plaintiff took depositions of witnesses proving infringement, these depositions being in evidence (Vol. 5, p. 2268) and printed at the beginning of Exhibit Volume 9.

On November 23, 1916, after the argument in, but before the decision of, the Supreme Court of the United States in the Hyde case, plaintiff petitioned the court below in the case at bar for an increase in security and other relief in view of the inadequacy of the bond as shown by the reports of the monthly operations of the defendant. When this petition was presented, defendant moved to vacate the order requiring monthly statements and to vacate the bond. Judge Bourquin decided that the opinion of this court in the Hyde case was the law of the Ninth Circuit, and denied plaintiff's petition and granted defendant's motion. His opinion is reported in 237 Fed. 401.

On January 13, 1917, after the decision of the Supreme Court in the Hyde case, the order for monthly statements and for the bond was reinstated by Judge Bourquin, and the time of trial assigned.

Pleadings. The bill of complaint was filed October 10, 1913 (printed, Vol. 1, pp. ii-viii).

The answer filed October 28, 1913 (printed, pp. xii-xxxii), sets up all of the defences of the Hyde suit and no other defences.

On March 27, 1917, about three weeks before the trial, the defendant filed a supplemental answer (printed pp. xxxiii-xli), setting up the decision of the Supreme Court holding claims 9, 10 and 11 of the patent in suit to be invalid, and averring that the plaintiff had unreasonably neglected and delayed the filing of a disclaimer, and that therefore the whole patent was void, and also averring that plaintiff was estopped from asserting that the patent was infringed by the use of an amount of oil exceeding five-tenths of one per cent. on the weight of the ore treated, by reason of certain statements made by counsel in the course of the argument of the Hyde case in the Supreme Court of the United States. It may be noted that the disclaimer happened to be executed in New York City on the day when this supplemental answer was filed in Butte and was filed in the Patent Office on the following day, March 28, 1917 (pp. cxv-cxvii).

On April 18, 1917, the second day of the trial, defendant filed an amendment to its answer (printed pp. lii-xlix) which in substance merely added the California Journal of Technology of November, 1903, as an alleged further anticipation of the patent in suit.

During the trial, on May 1, 1917, with leave of the court (Vol. 6, pp. 3436-3438) the plaintiffs filed a supplemental and amended bill of complaint (printed pp. lxxiv-lxxxiv), bringing in the additional parties Minerals

Separation American Syndicate, Ltd., and Minerals Separation North American Corporation, and pleading the disclaimer filed March 28, 1917, and charging continued infringement of claims 9, 10 and 11, as limited by said disclaimer, and of claims 1, 2, 3, 5, 6, 7 and 12 (pp. lxxviii-lxxix, par. 7). This supplemental and amended bill of complaint also pleaded the final decree in the Hyde suit and charged that the defendant in the present suit conducted and controlled the defence in the Hyde suit and was bound by the final decree in the Hyde suit. This latter contention was, however, abandoned by the plaintiffs at the close of the testimony (Vol. 8, pp. 4886, 4887), so that the present suit might be decided wholly on the merits.

Issue was joined on the supplemental and amended bill of complaint on May 4, 1917, by answer to the supplemental bill of complaint (Vol. 1, pp. cxxi-cxxxv) and by answer to bill of complaint as amended (pp. cxxxv-clxxvi).

Trial. The trial in open court commenced on April 16, 1917, and testimony was closed May 15, 1917, the twenty-fifth day of the trial. Oral arguments were presented at two extended sessions on May 16 and May 17. Thus the proceedings in court from beginning to end occupied twenty-seven days, practically five weeks. Additionally, however, the defendant gave an evening magic lantern exhibition of photographic slides in evidence, with explanations by Professor Taggart, on April 30, 1917 (Vol. 6, pp. 3411-3436). Additionally also the plaintiff exhibited the moving pictures in evidence to the court at an evening session on May 11, 1917, with

explanations appearing in full in the Record (Vol. 8, pp. 4538-4589). Further, on the afternoon of May 15, at the conclusion of the evidence, the court, on the invitation of the defendant, visited defendant's plant and inspected the operation of defendant's process there proceeding in the presence of plaintiffs' counsel and representatives, and on the same afternoon at the invitation of the plaintiffs visited the Timber-Butte mill, of a licensee of the plaintiffs, and inspected the plaintiffs' process there proceeding in the presence of defendant's counsel and representatives (Vol. 8, pp. 4887, 4888). Also during the trial numerous experiments, some fifty in all, were performed in illustration of the testimony, with material and products divided between the parties in open court for analysis and assay.

PRIOR ADJUDICATIONS.

In the opinion of the Circuit Court of Appeals for the Third Circuit in the suit of Minerals Separation, Ltd., one of the appellees herein, against Miami Copper Company (244 Fed. 752), the adjudications prior thereto are accurately tabulated (p. 754) as follows:

> "British Ore Concentration Syndicate, Ltd., v. Minerals Separation, Ltd., 25 R. P. C., 741, High Court of Justice Chancery Division; affirmed after intermediate reversal in the Court of Appeals by the House of Lords in
>
> Minerals Separation, Ltd., v. British Ore Concentration Syndicate, Ltd., 27 R. P. C., 33.
>
> Ore Concentration Company, Ltd., v. Sulphide Corporation, Ltd., Supreme Court New South Wales, 31 R. P. C., 216, 217.

Ore Concentration Company, Ltd., v. Sulphide Corporation, 31 R. P. C., 206, Privy Council British Empire (printed in Supreme Court record in Hyde suit, pp. 747-757).

Minerals Separation, Ltd., v. Hyde, 207 Fed. 956 (D. C. Montana).

Hyde v. Minerals Separation, Ltd., 214 Fed. 100 (C. C. A., 9th Circuit).

Minerals Separation, Ltd., v. Hyde 242 U. S. 261.

Minerals Separation, Ltd., v. Miami Copper Co., 237 Fed. 609 (D. C. Delaware)."

Additionally on May 24, 1917, the opinion of the Circuit Court of Appeals for the Third Circuit above cited and quoted was filed. This opinion was by Judge Woolley and was concurred in by Judge McPherson. There was a dissenting opinion by Judge Buffington (244 Fed. 775-792), but the dissent was limited to the question of infringement of the first patent there in suit, the patent here in suit. As to the validity of the patent here in suit and as to the validity and infringement of two other patents there in suit, there was no dissent.

The present suit is the *fifth litigation* involving the process in suit. In the *first (British Ore Concentration Syndicate, Ltd. v. Minerals Separation, Ltd.,* finally decided by the House of Lords of Great Britain, on November 16, 1909) Minerals Separation, Ltd., one of the appellees herein, was the defendant, and the alleged act of infringement was the use of the process in suit. The plaintiff was the owner of the Elmore British patents, corresponding to the Elmore patents in evidence herein, and the charge of infringement was finally limited to the second or A. S. Elmore patent correspond-

ing to U. S. patent No. 689,070 (printed Vol. 4, pp. 2093-2095). The trial court and the House of Lords decided that the use of the process in suit was not an infringement of this Elmore patent, and was a new method of separation.

The *second* suit, *Ore Concentration Co. Ltd. v. Sulphide Corporation Ltd.* was brought by the owners of the Elmore Australian patents against a licensee of the appellee, Minerals Separation, Ltd., and infringement was charged by the use of the process in suit. No appellee herein was a party to that suit. The trial "occupied thirty-one days" (31 R. P. C. 214) and the trial judge, Chief Judge in Equity Simpson, found again that the process in suit was a new method of procedure and did not infringe. Here also the charge of infringement was finally limited to the A. S. Elmore, or second Elmore patent. Appeal was taken directly to the Privy Council of the British Empire, with the consent of parties, and the Privy Council affirmed the trial court.

The *third* suit, *Minerals Separation v. Hyde,* started in the United States District Court of Montana, and was tried under the old equity practice. After final argument on pleadings and proofs Judge Bourquin decided that the patent in suit was valid and infringed. Appeal was taken to this court and the decree below reversed, on the ground that the invention was new only in degree and therefore unpatentable. The House of Lords judgment was referred to in the argument in this court. The Privy Council judgment was not rendered until March 6, 1914, after the argument of the Hyde case in

this court, although before the decision of this court. It was called to the attention of this court on petition for rehearing. This petition was denied, and a petition was thereafter presented to the Supreme Court of the United States for a writ of certiorari. This petition was granted, and the case was reviewed in the Supreme Court of the United States. The argument with extra allowance of time occurred on October 27, 30 and 31, 1916, and during the argument the Chief Justice announced a special informal session of the court between 10:30 and 12 in the forenoon of November 1, for demonstrations by the respective parties. These demonstrations were made in the court room and attended by all of the Justices, informally, occupying the floor of the court room and not the bench throughout the experiments. Thereafter, upon the commencement of the formal session of the court, at noon, the Chief Justice announced that an explanation of the experiments was desired, and that a further hour would be given to this, divided between the parties, one counsel for each party, upon the conclusion of the case then under argument. These explanations were given, and concluded the argument, which occupied in all seven and a half hours of the time of the court, during four days. The opinion of the court reversing the decree of this court and adjudicating the validity of the patent in suit and infringement thereof, was rendered on December 11, 1916, and is considered hereafter at length.

The *fourth* suit, that of *Minerals Separation Ltd. v. Miami Copper Company,* was commenced in the United

States District Court of Delaware. It was exhaustively tried in open court during the spring of 1915, the trial occupying nine weeks, and on September 29, 1916, Judge Bradford rendered the decision above cited adjudicating the validity and infringement of claims 1 and 12 of the patent here in suit, the invalidity of claim 9 of the patent here in suit, the validity and infringement of the second patent there in suit, known as the Soluble Frothing Agents patent, No. 962,678, Defendant's Exhibit 218 herein (printed Vol. 9, pp. 5274-5277) and invalidity of the third patent there in suit, not in evidence herein. Copies of this decision were handed to the Justices of the Supreme Court at the argument before that court of the Hyde case a month later.

Cross appeals were taken from Judge Bradford's decision in the Miami suit and were argued in the Circuit Court of Appeals for the Third Circuit at Philadelphia on January 30, 31, February 1, 2 and 3, 1917, occupying the entire time of the court for those five days. Plaintiff's appeal as to claim 9 of the patent here in suit was abandoned, as the Supreme Court had reached the same conclusion as Judge Bradford with respect to this claim. The Court of Appeals of the Third Circuit affirmed Judge Bradford as to validity and infringement of claims 1 and 12 of the patent here in suit, and as to validity and infringement of the Soluble Frothing Agents patent. They reversed Judge Bradford as to the third patent there in suit, adjudicating that patent to be valid and infringed. Their decision and the individual partial dissent of Judge Buffington, are considered later in this brief.

It will be noted that *in all five suits the trial courts have adjudicated the novelty of the invention here in suit,* and in the three suits based upon the patent here in suit, the validity and infringement of that patent. To like effect have been the adjudications of the three courts of absolutely last resort, the House of Lords of Great Britain, the Privy Council of the British Empire, and the Supreme Court of the United States, and the adjudication of the Circuit Court of Appeals for the Third Circuit, whose decision was not subject to appeal. *In all nine courts have so decided, and five courts have specifically adjudicated the validity and infringement of the patent in suit.*

It is of interest that in the Miami case the defendant obtained a stay on mandate for the purpose of preparing a petition to the Supreme Court of the United States for a writ of certiorari, and then gave notice of abandonment of its intention to petition for a review of the decree of that court, which, it is to be noted, was in all respects an interlocutory decree, referring the case to the court below for determination of profits and damages. The accounting in that case is now proceeding, and that is the only case except that at bar not finally concluded.

ORE CONCENTRATION PRIOR TO PATENT IN SUIT.

There is in the case at bar evidence additional to that in the Hyde suit, which very clearly sets forth the condition of the practical art of ore concentration as it existed prior to the invention in suit. This particu-

larly appears in the uncontradicted testimony of Professor Charles H. Fulton, a metallurgist of wide experience (Vol. 8, pp. 4388-4403).

Ore concentration as it existed prior to the patent in suit, and as it still exists where the invention in issue is not being used, is dependent upon the settlement in water of particles heavier than water but having a different rate of sinking power in water. At the date of the invention of the patent in suit, March, 1905, the mining world had nothing at its disposal for concentrating ores except this metal-sinking process, known as the water concentration process (Fulton, Vol. 8, p. 4390 et seq.; p. 4403, Q 10). The difficulty with this process is that sinking power is as much a function of size as it is of weight, so that although the metallic particles are heavier than the gangue particles, finely ground metallic particles will not sink with the larger metallic particles and will be carried away with the gangue (Fulton, pp. 4390-4392).

Metals are found in nature associated with rocky particles of worthless matter or gangue, the gangue forming the matrix in which the valuable metallic particles are held. The purpose of ore concentration is such a separation of the valuable metalliferous minerals from the worthless gangue as will produce a concentrate sufficiently rich in valuable mineral for the subsequent process of smelting, this being true as to the ores of copper, lead and zinc, and to some extent gold and silver. The metals zinc and lead are found in the form of sulphides having a metallic luster, copper is found in the form of metalliferous sulphides and sometimes pure

copper, and the same is true of silver and gold. These are the principal metals to which the process in suit is applicable.

It is common in the art to refer to the metal or metalliferous mineral as the "mineral" and to the rocky material, sand, clay, etc., as "gangue." This terminology appears throughout the record, and to some extent in this brief.

The first essential of any treatment is the grinding of the ore, and this should be carried to such a point as to free the metallic particles from the gangue particles, to produce in fact wholly separate particles of metal and gangue. But every process of crushing or grinding, no matter how carefully manipulated, produces great quantities of extremely fine particles called slimes. The finer the grinding the greater the proportion of the slimes. *If the crushing is coarse, the metals and gangue are not separated and the metal is very apt to go away with the gangue. If the crushing is fine, the great amount of slimes produced will nearly all go away with the gangue.* This was the dilemma of the millman, and the slimes problem was so acute that coarse grinding was the rule. The metallic particles are usually much more brittle and friable than the gangue, so that the slimes were usually richer than the coarse particles.

Water Concentration. This process, above generally described, is the common process of ore concentration. It is in fact a process of washing the dirt or gangue away from the metal. It was the only process available to the mining world before the process of the pat-

ent in suit was invented, and is still in use where the process of the patent in suit is not in use.

Briefly it may be said that the water concentration process is carried on with a great amount of machinery —jigs with upward streams of water, and vanners, and shaking tables with streams of water flowing over them. The heavier metallic particles go to the bottom, while the lighter gangue particles, which do not sink so rapidly are flowed away in suspension by the water, and with them are flowed away the valuable metallic slimes. The great problem of the art preceding the invention in issue was the slimes problem, and that problem the invention in issue completely solved, since slimes are more readily concentrated by the invention in issue than coarser material and the presence of slimes seems to be essential for successful operations. It was quite usual in the prior art to deslime, that is to separate and throw away or dump the slimes, but whether they were separated and discarded before water concentration was attempted, or appeared in the tailings of water concentration, the result was the same, they were waste material rich in metal.

The evidence in the case at bar includes, additionally to that in the Hyde case, references to and quotations from the literature of the art as published just prior to the invention in suit, showing its attitude toward the problems which were solved by the invention in suit.

The "foremost authority of the world on ore dressing, Professor R. H. Richards" (Fulton, Vol. 8, p. 4393) in his standard text book on ore milling, "Richards on Ore Dressing," published in 1903, just a little more than

a year before the birth of the invention of the patent in suit, gives us an excellent statement of this attitude of the art. From the extracts read from this standard work (pp. 4393-4400) it will be seen that the great problem of the art was the slimes problem, presenting to the millman the dilemma that if he ground too coarse he would not free the metal from the gangue, and if he ground reasonably fine he would lose great quantities of metal in the slimes which, by reason of the brittle character of the sulphide particles, were richer than the coarser material. In these quotations we find such statements as the following:

> "Greasy flotation is a source of slime loss" (Vol. 8, p. 4396).

And, again:

> "Greasiness.—This is the term used to express the tendency of minerals to float on the surface of water as if they were greasy. It is caused by the aversion of the surface of the particle to become wetted. The particle may carry an air bubble down with it, which later floats it to the surface, or its dry surface may prevent its sinking at all, the particle floating at the base of a little dimple or depression on the surface of the water. This causes much trouble in ore dressing. * * * This property may be regarded rather as a difficulty to be overcome than as a help, for the reason that it cannot be depended upon—at one moment a given grain will float, at another it will sink" (Vol. 8, pp. 4396, 4397).

We also find the attitude of the art toward improvement as follows:

> "Tendency and Future.—The tendency is distinctly toward graded crushing, graded sizing and graded washing" (pp. 4397, 4398).

That is to say, crush in several operations, deslime, and separate the crushed material into graded sizes, and wash it as thus graded. The following is the prophecy:

> "The future progress to be made in ore dressing will probably be more in the development and perfection of the existing processes and machines than in the introduction of new processes. Not that new processes do not appear,—for they are brought out constantly,—but their disappearance is usually as sudden as their appearance" (p. 4398).

And this was in 1903. The engineers of the art looked for nothing better than improvements in water concentration methods, developments of the existing machines with slime losses minimized as much as possible. Greasy flotation was merely a source of trouble adding to the slime losses, and so uncertain as to be incapable of utilization.

Prior Oil Processes. In the book above referred to, a cyclopedic work on ore dressing, we should expect to find a reference to any departure from water concentration which had made the slightest impression on the art, and we do find here a reference to the Elmore oil-buoyancy flotation process (p. 4399) as a hope of the metallurgical art for those conditions where "there is only a slight difference in specific gravity between the mineral and gangue" (p. 4398). Nothing else that the defendant refers to is mentioned in this resume by Richards of the art of ore concentration almost contemporaneous with the birth of the invention of the patent in suit.

The Elmore oil-buoyancy flotation process required in its operation at least a ton of oil to a ton of ore, and lost about eight per cent. of the oil (Ballantyne, Vol. 2, pp. 358-361, Qs. 6, 7), the loss being about eighty times as much oil as is usually required in the process of the patent in suit. It reached the mill and failed (p. 360). It required coarse crushing and slimes were detrimental to the process (Liebmann, p. 557). It could not, therefore, solve the slimes problem.

The Cattermole metal-sinking process was the only other oil-using concentrating process that reached the mill. After elaborate preparatory investigation it was installed in Australia and operated for a few days only, then modified into an unsatisfactory hybrid film or skin flotation process (Chapman, pp. 245, 246, Qs. 22, 23), and then replaced by the process of the patent in suit (Q. 24). It depends upon the agglutination of the metal particles, including the metal slimes, by the cohesiveness of oil coatings thereon, into larger granules which will reliably sink when treated by water concentration methods.

PATENT IN SUIT

This patent No. 835,120, was issued November 6, 1906, to Sulman, Picard and Ballot.

The process of the patent in suit is an air flotation process wherein, by the use of a frothing agent, and in the presence of such agitation as will maintain or produce distribution of the ore particles through the pulp and dissemination of bubbles of air through the pulp,

the air bubbles will seize the metallic particles and will carry them to and through the surface of the pulp, so as to permit of their delivery at or above the surface of the pulp separate from the gangue particles, which remain in suspension in the pulp or sink to the bottom.

The process of the patent in suit is the pioneer process of this character.

In it the frothing agent is an oil or immiscible or insoluble material. The discovery was that this mode of operation in the concentration of ores was attainable in the presence of oil. The process is not an oil flotation process, but is an air flotation process. The oil coats the metallic particles, modifies the water so as to produce or maintain minute and persistent air bubbles, and increases the attraction of the metallic particles for the air bubbles; and the persistency of the air bubbles and their attachment to the metallic particles are so great that the air bubbles carry the metallic particles to and through the surface of the pulp and when the air bubbles are exposed at or above the surface of the pulp, their oil-contaminated water films, carrying the metallic particles, are maintained intact until their separation from the body of the pulp has been effected, by overflowing or otherwise.

The air bubbles carrying the metallic particles form a floating mass of bubbles pressed against each other, frequently several inches in thickness, upon the surface of the pulp. Under quiescent conditions, this froth may float for days and weeks. A quiescent froth of this character has therefore been called a persistent or permanent froth. On the other hand the air bubbles which

carry the metallic particles may be continuously overflowed over a lip or dam, pressed upward by newly rising air bubbles, the froth being inflated if desired by excess of air bubbles. A wide range of opportunity is therefore afforded for the collection of the metallic particles selected and levitated by the air bubbles, and as the patent says, the froth may be "removed from the pulp by spitzkast, upcast, skimming, draining or otherwise" (Spec., p. 2, lines 1-3).

The patent fully and completely discloses the invention, and gives to the public the best knowledge possessed at the time of the filing of the patent application of the means for utilizing the invention, as abundantly appears in the record.

The important point as to discovery is truthfully stated to be that the inventors have found that a considerable reduction of oil from that required for the Cattermole granulation or metal-sinking process brings about the new process which the patent discloses and claims. The statement is as follows:

> "We have found that if the proportion of oily substance be considerably reduced—say to a fraction of one per cent. on the ore—granulation ceases to take place, and after vigorous agitation there is a tendency for a part of the oil-coated metalliferous matter to rise to the surface of the pulp in the form of a froth or scum" (Spec., p. 1, lines 28-35).

This discovery is a historical fact, proved by three sets of contemporaneous documents, as well as by the testimony of the inventors and of the metallurgist who, under their direction, performed the experiments which led to and culminated in the discovery. This is here-

after particularly described under the heading "Discovery."

The Cattermole patents Nos. 777,273 and 777,274 are specifically referred to (Spec., p. 1, lines 16-27) in the preceding paragraph, and thus the reference to the Cattermole process is made definite and precise.

It will be noted that *a fraction of one per cent. is here stated in the specification by way of example.* A considerable reduction below the proportions of the Cattermole granulation or metal-sinking process is a considerable reduction below what is necessary in that particular instance to produce the Cattermole operation of adhesion of the mineral into granules that sink. This was, for example 5% on an ore having a 50% (or more) metalliferous mineral content, that being the standard in the only practical use that was ever made of the Cattermole process (Chapman, Vol. 2, p. 240, Q.9). This is 2½% or more of the ore, or 50 pounds of oil to the ton of ore. Again, in the laboratory at London, the Cattermole process was carried on with oil in the proportion of 1½% of the ore, and this is the smallest proportion that was ever used in the Cattermole process.

As to the Cattermole process patent No. 773,273, this patent suggests, as the Supreme Court says, "4% to 6% to 10% of the weight of the metalliferous mineral matter" (Opinion, p. 3*), insists upon a large metalliferous mineral content, and directs the user to

*The references in this brief to the Supreme Court opinion in the Hyde case will be to the pamphlet opinion as published by the Supreme Court.

determine by actual test and use the right amount of oil for carrying on its metal-sinking operation.

The various factors which contributed to the discovery are then briefly stated, to wit: acidification (Spec., p. 1, lines 36-45), this being stated as preferential "to render the selective action of the oil more marked" (Spec., p. 1, lines 43-44); and further it is stated that the process may be assisted if the pulp is warmed (Spec., p. 1, lines 51-56). Then comes a statement of great importance—of perhaps the most important advantage of the invention—as follows:

> "The formation of froth is assisted by the fine pulverization of the ore, and we find that slime mineral most readily generates scum and rises to the surface while larger particles have less tendency to be included in the froth" (Spec., p. 1, lines 56-61).

Indeed the process will deal with slimes alone, a reject from all other processes heretofore or now in use, and take out the valuable mineral from pure slimes, as has been demonstrated by actual work in Australia and in the United States. Without this process slime production is the bane of the millman—the ruin of the mill. With it slime production is the rule of the millman—the salvation of the mill. Enormous losses of all other processes are saved. This subject was considered in the preceding chapters and necessarily appears more or less throughout the consideration of the invention in suit.

The factor of "fine pulverization of the ore" is illustrated in the specification by a specific example of the carrying on the process with a particular ore, to wit: Broken Hill ore of Australia, and it said that

> "If the ore were crushed to ninety mesh to the linear inch (half of which ore will pass through one hundred and fifty mesh sieve)" (Spec., p. 1, lines 102-104).

the first froth obtained from a single agitation "may contain about seventy per cent. to eighty per cent. of the metalliferous matter present in the ore" (Spec., p. 1, line 105). This was an exact description of what took place in the tests made following the discovery of the new process. This was very fine crushing, finer than the prior art had dared to use, producing as stated a very large proportion, about fifty per cent. of what was practically slimes. As testified to by Mr. Higgins, the ores treated in 1905 were generally crushed to 30 or 40 mesh, and it was doubted whether the profits of the operation would sustain the cost of crushing to 90 mesh (Vol. 8, pp. 4535, 4536, Q.362). This recommendation of very fine crushing was therefore put forward cautiously.

In processes of ore concentration of wide application, a great variety of different ores has been and will be encountered. This fact is generally recognized by all familiar with mining operations. Each ore to some extent presents its own problem to the engineer. As the Supreme Court of the United States says in the Hyde case:

> "The composition of ores varies infinitely, each one presenting its special problem, and it is obviously impossible to specify in a patent the precise treatment which would be most successful and economical in each case. The process is one for dealing with a large class of substances and the range of treatment within the terms of the claims, while leaving something to the skill of persons applying the invention, is clearly sufficiently definite to guide those skilled in the art to its successful

application, as the evidence abundantly shows. This satisfies the law'' (242 U. S., p. 261, pamphlet opinion p. 7).

And as the District Court said in the same case:

''It is true every ore presents its own problem of reduction. So, while all may lend themselves to a general method, each may require some modification of the method. All skilled in the art understand this and know that in addition to the best scientific theory they must add the light given by trial and practice. Thus only, in the majority of cases, are good and the best results obtained in any ore reduction—smelting, milling or concentration'' (207 Fed. 961).

The statement in the specification is as follows:

''The proportion of mineral which floats in the form of froth varies considerably with different ores and with different oily substances, and before utilizing the facts above mentioned in the concentration of any particular ore a simple preliminary test is necessary to determine *which oily substance* yields the proportion of froth or scum desired'' (Spec., p. 1, lines 61-69).

Mr. Chapman in the Hyde case (Vol. 2, pp. 263-265, Q. 51) well described the simple preliminary tests which are being made every day in the laboratories of the appellees. The determination of the conditions best adapted for the treatment of any ore, and ''which oily substance'' will do the work, is a simple metallurgical operation.

Thus the specification directed the appellant to test its ore for the purpose of determining a suitable oily substance and the proportions in which it should be used to give the best results of the process.

The first operations of the appellant followed exactly the directions of the specification with the use of the

oil oleic acid, which is the example of the specification, in the proportion of .16% of the ore (3.2 lbs. per ton of ore) as proved in the Hyde suit for the operations of August, 1911 (Chandler, Vol. 2, p. 166, Q. 15). Later another froth-producing oil, pine oil, was mixed with the oleic acid in a total proportion of .14% (2.79 lbs. per ton of ore). This began in September, 1913 (Dosenbach, Vol. 6, pp. 3442, 3443, XQs. 436-440). Experience demonstrated that pine oil could be used alone, and this became the standard practice commencing about December, 1914, with pine oil in the proportion of .18%, or 1.64 lbs. per ton of ore (p. 3444, Qs. 449, 450). During the years 1915 and 1916 pine oil alone was the standard practice until December 22, 1916 (Q. 452) and the appellant's table of operations shows that for the years 1915 and 1916 oil was used in the proportion of .07% (Vol. 9, pp. 5184, 5185). The process of the patent in suit was then used at greatest advantage and with the best results ever attained by the appellant. The directions of the specification of the patent in suit had been explicitly followed. But on December 11, 1916, the Supreme Court of the United States decided that all of these operations were infringements of the patent in suit, and the appellant cast about for some means of continuing to use the invention and yet evading the patent. A mixture of oils was finally produced containing 70% of fuel oil, 12% of kerosene and 18% of pine oil (Dosenbach, Vol. 6, pp. 3344, 3345, Qs. 136, 137), and it was found that this mixture could be used in a total proportion either slightly under 1%, and therefore a fraction of one per cent., or at 1% and

therefore not a fraction of one per cent., and even slightly above 1%. At 1% the proportion of pine oil is .18% of the ore, and the proportion of the petroleum oils, fuel oil and kerosene, is .82% of the ore. The fact that these petroleum oils were not such oily substances as would do the work, could have been and probably was verified by appellant by simple tests such as Mr. Higgins performed at the trial (Vol. 8, pp. 4603-4614). Therefore according to the disclosure of the specification (held by the Supreme Court to be a sufficient disclosure) the oily substance which was then added to the froth-producing oil was not an oily substance which would carry on the process of the patent in suit with the appellant's ore. It was therefore not the oil of the specification or the oil of the claims of the patent in suit, but mere extraneous material no more entering into the process described and claimed than any other extraneous material which did not happen to be an oil or an oily substance. It may be noted that the increase in the froth-producing oil from .07%, the proportion of 1915 and 1916, to .18%, the proportion used in the petroleum-containing mixture, was a slight increase in the amount of froth-producing oil, evidently to mitigate to some extent the deleterious effects of the useless material poured into the pulp.

The specification next gives the example of the application of the invention to the concentration of Broken Hill ore, with the use of a particular oily frothing agent, to wit, oleic acid. The statement in the specification is as follows:

> "The following is an example of the application of this invention to the concentration of a particular ore" (Spec., p. 1, lines 70-73).

This description is well summarized by defendant's expert in the Hyde suit, Dr. Byrnes, as follows:

> "The patent then proceeds with a detailed description of the treatment of a particular ore, containing ferruginous blende, zinc sulphide carrying iron; galena, lead sulphide; and gangue consisting of quartz, rhodonite and garnet, silica or silicates containing no metalliferous values" (Vol. 4, pp. 1456, 1457).

This example is the well known ore of Broken Hill, Australia (Liebmann, Vol. 3, p. 709), which is the ore upon which the process was first tried and first used in practice.

This example of the application of the process with oleic acid to Broken Hill ore is described as conducted in "a cone mixer or the like as in the processes previously cited" (Spec., p. 1, lines 83-85).

The processes previously cited are those disclosed in the two Cattermole patents referred to earlier in the specification (Spec., p. 1, lines 16-27). The "cone mixer" is the so-called Gabbett shown and described in Gabbett U. S. patent No. 444,345 of January 6, 1891, and the form of Gabbett used was that shown in Figure 9 of that patent (Vol. 3, p. 1227), with omission of the inner ribs A^1 of the rotating cone A, all as appears in the physical exhibit in the Hyde suit Complainant's Exhibit Cone Mixer, identified by Mr. Higgins as a reproduction of the original apparatus used by him in March, 1905 (Vol. 3, pp. 925, 926, Qs 23, 24).

The specification says that the ore pulp containing oil

> "is briskly agitated in a cone mixer or the like, as in the processes previously cited, for about two and one-half to ten minutes, until the oleic acid has been brought into efficient contact with all the mineral particles in the pulp" (Spec., p. 1, lines 83-88).

Brisk agitation such as characterized the Cattermole process (in the identical apparatus and at exactly the same speed) effected abundant aeration of the pulp. In the Cattermole process the *Gabbett was speeded up—its "speed was very much increased"* over what had been used in prior uses of the Gabbett—and in fact Cattermole *introduced high speed agitation into the metallurgical art* (Higgins, Vol. 8, pp. 4533, 4534, Qs 351-354). Even appellant's expert Sadtler admits that especially violent agitation was a characteristic of the Cattermole process (Vol. 7, p. 3605, Qs 173, 174). This high speed of agitation, at about 900 revolutions per minute (Vol. 8, pp. 4534, 4535, Q358) produced abundant aeration which was of no utility in the Cattermole process and no hindrance when the granules were properly made (Qs354-357). The cone revolving at this speed of 900 revolutions per minute operated to produce a vortex in the center of the revolving pulp, this vortex drawing in air from above and introducing it into the pulp near the bottom of the body of the pulp so that the actual operation was subaeration of the pulp, although the air came from above. The process in suit was carried on at the time of its discovery in the Cattermole apparatus and with the Cattermole

speed of operation, 900 revolutions per minute (Higgins, pp. 4534, 4535, Q58).

The specification then says:

> "When agitation is stopped, a large proportion of the mineral present rises to the surface in the form of a froth or scum which has derived its power of flotation mainly from the inclusion of air bubbles introduced into the mass by the agitation, such bubbles or air-films adhering only to the mineral particles which are coated with oleic acid" (Spec., p. 1, lines 89-96).

Here we have described the production of a metal-carrying air-froth resulting from the introduction into and inclusion in the pulp of *air bubbles adhering to the mineral particles coated with oil,* i. e., resulting from the oil-modified air-lift which follows such agitation as characterized the Cattermole process.

The amount of oil described in this specific example is

> "a very small proportion of oleic acid, say from 0.02 per cent. to 0.5 per cent. on the weight of the ore" (Spec., p. 1, lines 80-82).

and the recommendation as to this specific example is

> "the minimum amount of oleic acid which can be used to effect the flotation of the mineral in the form of froth may be under 0.1% of the ore; but this proportion has been found suitable and economical" (Spec., p. 1, lines 96-101).

Thus for Broken Hill ore, with oleic acid as the oil, and in the presence of a small proportion of "a mineral acid or acid salt" (Spec., p. 1, line 77) and with pulp warmed "say to 30° to 40° Centigrade" (Spec., p. 1, lines 82, 83), the proportion of oleic acid recommended

is "0.1% of the ore" (Spec., p. 1, lines 99, 100), and the limits suggested are say from0.02% to 0.5% on the weight of ore" (Spec., p. 1, lines 80-82). Any attempt to ascribe to this language a limitation of the invention, in all its applications to all ores, to .5% on the ore as the maximum quantity, is wholly unjustified. The disclosure of the invention is given

> "in such full, clear, concise and exact terms as to enable any person skilled in the art or science to which it appertains * * * to * * * use the same" (U. S. R. S., Sec. 4888),

as has been adjudged by the Supreme Court of the United States. The inventors have performed their duty by filing such a description in their specification. It is not within the bounds of reason that having done so as to one application of their invention, they are to be limited by the details of that description as to every application of their invention. And so the Supreme Court expressly said in the opinion in the Hyde suit (p. 7).

The description of the operation is concluded by a statement as to the removal of the froth. The specification says:

> "This froth is removed from the pulp by spitzkast, upcast, skimming, draining, or otherwise" (Spec., p. 2, lines 1-3).

This completes a disclosure of an operation embodying the invention, and had the specification stopped here, the invention would have been completely disclosed. Professor Chandler, in his explanation of the invention as disclosed in the specification, stops at this point (Vol.

2, pp. 136-143, Q4). For the purpose of the Hyde suit, no further explanation was necessary.

The patent further describes, however, a complete apparatus for continuous operation, with one Gabbett or several Gabbetts in series and a series of spitzkasten acting both for froth separation and for classification of the tailings. This apparatus is diagrammatically shown in Figure 1 of the patent and is specifically described. It is a continuously acting apparatus, whereas the single Gabbett without spitzkasten first described is necessarily an intermittent apparatus. This continuously acting apparatus need not be considered in detail, however, since classification of the tailings is not an essential part of the process, although used to some extent today in connection with the process.

Two other disclosures of the patent, as to the method of introducing air and the kind and degree of agitation, become of special interest in the present suit because here the appellant uses two forms of apparatus employing compressed air discharged into the pulp through a porous medium, for both agitation and aeration. These disclosures will now be considered.

Froth-flotation by air bubbles liberated in the pulp. One of these disclosures is of what is known as the superaeration modification. It was tersely explained by defendant's expert Dr. Brynes in the Hyde case as follows:

> "In the modified apparatus shown in Figure 2 of the drawing, the oiled and agitated pulp from the cone mixer is passed through a discharge-conduit a^1 pipe a^2, pump e and pipe e^1, into a closed chamber f, wherein it is first subjected to an atmosphere of air or other gas compressed

> to from 50 to 100 pounds per square inch, for a few minutes, being thence discharged to the froth-separator with three chambers heretofore described. The air or gas dissolved under pressure and evolved upon discharge from the compression-vessel, assisting the aeration produced in the cone agitator, is said to cause all of the oiled mineral to rise to the surface as a single froth, obviating the necessity of retreating the tailings, as with the first apparatus illustrated'' (Vol. 4, p. 1460).

This is almost a fair description of this modified procedure disclosed in the patent in suit, wherein the pulp is subjected to air or other gas pressure so as to effect the solution of the air or gas in the pulp (thereby also largely dissolving the air bubbles that were produced by agitation) and the pressure is thereafter relieved, whereupon air or gas bubbles are liberated from solution throughout the pulp and

> ''at once sweep to the surface thereof all of the metalliferous matter in the form of a froth'' (Spec., p. 2, lines 113-115).

This modification is first described as an alternative method for the recovery of metal from the finer tailings which settle in the second and third spitzkasten of the three spitzkasten shown in Figure 1 of the patent in suit (Spec., p. 2, lines 103-116); alternative to ''*further treatment by agitation*'' (Spec., p. 2, lines 86, 87), as to the ''medium sands'' which sink in the second spitzkasten J^2 (Spec., p. 2, lines 84, 85), and alternative to discharge ''to waste or further treatment'' (Spec., p. 2, lines 91, 92), as to the ''fine sands or gangue slimes'' (Spec., p. 2, line 90), which settle in the last spitzkasten J^3. This part of the description is referred to by appellant's expert Dr. Sadtler as

> "the introduction of air without the violent agitation" (Vol. 5, p. 2819, Q79).

although he overlooks the later description of this air bubble liberation method as a complete modified process of froth formation and separation, commencing with crushed ore and circuit water fed into a Gabbett and ending with the separation of the froth by overflowing (Spec., p. 2, line 120, p. 3, line 34).

In connection with the first mentioned of these descriptions there is a disclaimer in the following language:

> "This idea is not claimed broadly in this case, but forms the subject matter of an application filed by us on January 9, 1906, Serial Number 295,326" (Spec., p. 2, lines 116-119).

The idea thus disclaimed is the broad idea of air or gas bubble introduction into an ore pulp by solution of the air or gas therein at high pressure, and liberation from solution throughout the pulp by relief from the high pressure. This broad idea is capable of use in film flotation with or without oil, and in froth flotation, with or without oil, and the patent in suit is only concerned with its use in froth flotation with oil, which is one specific application of this broad idea. All of the uses of this broad idea are covered in the superaeration patent No. 835,479, which was issued simultaneously with the patent in suit on November 6, 1906 (Vol. 4, pp. 2172-2174), on the aforesaid application filed January 9, 1906, Ser. No. 295,326 as a division of (i.e., containing matter withdrawn from or divided out of) the

application for the patent in suit. The broad claim of that patent is as follows:

> "1. The process of separating powdered minerals from one another which consists in suspending the powdered minerals in a liquid, subjecting the mixture to a gas pressure, and thereafter relieving the pressure whereby bubbles of gas are liberated in the pulp and carry certain minerals to the surface" (Vol. 4, p. 2174).

This is a very broad claim and any use of superaeration in froth flotation with an oily reagent would be dominated by it. Likewise any other use of superaeration in flotation of minerals would be dominated by it. The disclosure of superaeration in the patent in suit is therefore a specific application of the broad superaeration invention claimed in patent No. 835,479. To that extent the patent in suit discloses a specific application of superaeration. In fact it discloses two specific applications of superaeration, one as a supplement to the process as carried on in the apparatus shown in Figure 1 of the patent in suit, and the other either as a substitute for the procedure carried on in the apparatus of Figure 1 of the patent in suit, or as a substitute for the first disclosure of the procedure in the single Gabbett. Both disclosures are of froth flotation, and both are within and are covered by the claims of the patent in suit. The disclaimer of the broad superaeration invention and the reference to the companion application are therefore appropriate, properly informative to the public, and might have been necessary to prevent abandonment of the broad invention of superaeration if it had happened that the patent in suit issued first and the superaeration patent issued on a

later day. It happened that the two patents issued on the same day and the information of the public was complete on that day.

Thus froth flotation with superaeration is covered by the claims of the patent in suit and is also more broadly covered by the claims of the superaeration patent No. 835,479. On the other hand froth flotation without superaeration, or any other procedure without superaeration, would not be covered by this patent No. 835,479. We have here an excellent example of the familiar fact in patent law that patented inventions may under certain conditions overlap and under other conditions be independently applied. The disclaimer in the patent in suit is therefore a proper disclaimer, exactly fitting the facts, and properly notifying the public that they are to seek in another patent the broad claims for superaeration, although its uses in the two specific applications disclosed in the patent in suit are given as examples of modified procedures within the claims of the patent in suit. Obviously the purpose of the inventors in including these modified disclosures in the specification of the patent in suit was to furnish additional examples of the application of the invention patented by the patent in suit; and this is particularly true as to the description of the procedure in the apparatus shown in Figure 2, since this procedure is described as a complete substitute for the entire procedures earlier described in the specification, and can have no purpose in the specification other than as a description of a modified procedure embodying the invention claimed in the patent in suit.

Oil-coating with gentle agitation. The other disclosure which now becomes of interest, is of a modification in the method of disseminating the oil through the pulp and coating the mineral with oil. The specification of the patent in suit says:

> "If desired, the oleic acid used in the first instance may be produced *in situ* in the pulp by decomposing a dilute soap solution with mineral acid, as described in the previous patent, No. 777,274, cited above" (Spec., p. 2, lines 9-13).

The patent here referred to is the Cattermole, Sulman & Picard patent known as the soap and granulation patent, also referred to earlier in the specification of the patent in suit (Spec., p. 1, lines 23-27). In this patent No. 777,274 (printed Vol. 4, pp. 2141, 2142), we find a full description of a procedure which obviates the necessity of employing agitation to bring the particles of oil in contact with the metallic particles and to cause the metallic particles to be coated with films of oil. This description is as follows:

> "In carrying out our invention the suitably-crushed ore is suspended in water, and to the mixture an addition of a small quantity of soap solution is made. A small amount of mineral acid is then added, which decomposes the soluble soap or other similar compound by uniting with the alkaline base thereof, thus liberating in a state of chemical subdivision the fatty or resin acid or other compound, such as cresol, &c., in intimate contact with the suspended ore particles. It is found that the liberated acids [*such as the oil oleic acid*] &c., which may even be solid under ordinary conditions, are precipitated and adhere to the sulphureted minerals or to sulphur, graphite, or free metals present in the ore, leaving the gangue or earthy particles preferentially wet by water and free from adhesions of fatty acid and the like. The fatty acid and

> the like used for the purpose of adhering to the mineral particles is thus produced *in situ* throughout the suspended ore mass in the most intimate contact or admixture therewith, and the mineral particles become attached to or more or less coated by films of fatty or resin acid'' (Vol. 4, p. 2141, lines 32-56).

In the specification of this patent No. 777,274 there is no mention whatsoever of agitation. Concededly a certain amount of gentle stirring would be advisable for uniform distribution throughout the water of the ''soluble soap'' added in the form of ''soap solution,'' such for example as is required to uniformly distribute the milk which has been added to a cup of coffee, and similarly a gentle stirring for distributing the acid through the thin solution of soluble soap in water, but this is merely the commingling of miscible liquids. Beyond that no agitation is required for coating the mineral particles with oil.

With the employment of this suggested modification of procedure, the employment of brisk agitation for the purpose of bringing the oleic acid

> ''into efficient contact with all the mineral particles in the pulp'' (Spec. pat. in suit, p. 1, lines 87, 88).

becomes no longer necessary and the problem of froth concentration resolves itself simply into one of producing modified air-bubbles in the pulp and bringing these air bubbles into contact with the oiled metallic particles. Obviously any apparatus that aerates effectively and brings the air bubbles into contact with the oiled metallic particles and results in the production and separation of a froth concentrate, will carry on the process. The language of Judge Bradford in *Minerals*

Separation Ltd. v. Miami Copper Co. (237 Fed. 631-633) is here particularly apt. He considers very fully the defendant's use of a Callow cell pneumatic aerator and agitator and the disclosures of the patent in suit as to agitation in a Gabbett and then says:

> "The strength of agitation referred to in the description clearly admits of different degrees, varying from one another in the application of the process to different ores and under changing conditions. There is no room for doubt that agitation of the mixture in the process of the defendant is sufficiently vigorous or brisk to insure efficient ore concentration by an air flotation process such as is accomplished by the complainant by agitation under the process of the first patent in suit. This being true the use of mere adjectives in the descriptive portion of the patent with respect to agitation is unimportant. In order that the bubbles in the pulp mixture may come in contact with the metallic particles there must be such movement between them as cannot be wholly accounted for by selectivity as between them, and their movement, so far as not accounted for by selectivity, is the result of agitation; and whether such agitation results from the stirring or beating of the mixture or the forcing or admission of air into it is immaterial; for what this court is dealing with is not an apparatus patent, but a process patent."

Apparatus of Figure 1. As to the continuous procedure carried on in the apparatus of Figure 1 of the patent in suit, it may be noted that this specific three-spitzkasten tailings-classifier was designed for treating the coarse crushed material which the inventors actually used and it to some extent indicates their fear that the fine crushing which they recommend in the patent might not be generally accepted by the art (Higgins, Vol. 8, p. 4535, Q362). The specification says:

> "The formation of froth is assisted by the fine pulverization of the ore, and we find that slime mineral most

> readily generates scum and rises to the surface, while the larger particles have less tendency to be included in the froth'' (Spec., p. 1, lines 56-61).

The specification also says:

> ''The metalliferous matter which did not form part of the froth (generally the larger particles) remains in admixture with the gangue in the pulp'' (Spec., p. 2, lines 25-28).

The tailings-classifying function of the spitzkasten arrangement shown is well described by Mr. Higgins (Vol. 8, pp. 4535-4537, Qs360-368). The arrangement was devised for dealing with coarse crushed ores. In practice finer crushing, such as recommended in the patent, proved practicable, and first the up-currents were discontinued (Sulman, Vol. 4, p. 1611, Q28) and later the apparatus was reduced to a single spitzkasten for each froth separation, as in the Minerals Separation standard machine (Vol. 3, pp. 1306-1308). Indeed, the art is now chiefly concerned with crushing the ore to extreme fineness, 100 and 150 mesh, and the invention of the process in suit has wholly changed the procedure of the art in this respect (Higgins, Vol. 8, p. 4537, Q369).

It is to be noted also that the classification (separation into material or different sizes) of material treated by the process in suit, is still used, as, for example, all the middlings of the Utah Arthur plant are put through a classifier to assure that only the finest material returns to treatment by the process (Janney, Vol. 5, pp. 2550, 2551; Vol. 7, p. 3826).

Among the recommendations of the patent in suit for further treatment to separate the metalliferous matter not recovered in the froth is "*further treatment by agitation*" (Spec., p. 2, lines 86, 87). This recommendation of the patent in suit has been followed in the development of the new art which the invention of the patent in suit created as well as the recommendation of very fine grinding, and today flotation-concentration is characterized by these two dominating factors, *fine grinding and repeated agitation and aeration.*

That an invention such as that in suit, of a new process or art, is not to be limited to the particular apparatus in which it is carried out by the inventors, is a proposition of patent law fundamental in character. The Telephone cases (126 U. S. 1, 533) illustrate the determining principles. Here Mr. Chief Justice Waite said (p. 533):

> "The patent for the art does not necessarily involve a patent for the particular means employed for using it. Indeed, the mention of any means, in the specification or descriptive portion of the patent, is only necessary to show that the art can be used; for it is only useful arts—arts which may be used to advantage that can be made the subject of a patent. The language of the statute is that 'any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter,' may obtain a patent therefor. Rev. Stat., Sec. 4886. Thus, an art—a process—which is useful is as much the subject of a patent, as a machine, manufacture, or composition of matter. Of this there can be no doubt, and it is abundantly supported by authority. Corning v. Burden, 56 U. S., 15 How. 252, 267; Cochrane v. Deener, 94 U. S. 780, 787, 788; Tilghman v. Proctor, 102 U. S. 708, 722, 724, 725; New Process Fermentation Co. v. Maus, 122 U. S. 413."

The specification makes the intendment of the patentees quite clear in its closing statement, as follows:

> "The nature and arrangement of the apparatus used may be varied without departing from this invention" (Spec. p. 3, lines 35-37).

Further, the specification describes Figure 1 as

> "illustrating one form of apparatus suitable for carrying this invention into practice" (Spec., p. 2, lines 47-49).

CLAIMS ADJUDGED VALID BY THE SUPREME COURT.

The claims in issue are 1, 2, 3, 5, 6, 7, 9, 10, 11 and 12, as pleaded in the original bill of complaint (p. iv, paragraph VI) and in the supplemental bill of complaint (p. lxxviii, paragraph 7). They are the same claims that were in issue in the Hyde case, the charge of infringement in that case having been thus limited by notice on the record (Vol. 2, p. 168). The only change that has occurred in these claims has been the limitation of claims 9, 10 and 11 by disclaimer, to be hereinafter considered. The claims in issue are analytically stated by Professor Chandler and are also analyzed by him (Vol. 2, pp. 143-147). Claim 1 is as follows:

> "1. The herein-described process of concentrating ores which consists in mixing the powdered ore with water, adding a small proportion of an oily liquid having a preferential affinity for metalliferous matter (amounting to a fraction of one per cent. on the ore), agitating the mixture until the oil-coated mineral matter forms into a froth, and separating the froth from the remainder by flotation."

According to the process pointed out in this claim powdered ore and water are commingled to form an ore pulp, a small proportion of an oily liquid, amounting to a fraction of one per cent. on the ore, is added to the pulp, and the mixture is agitated until the oil-coated metalliferous particles form into a froth, and this froth is separated from the remainder by flotation. This process as disclosed in the patent may be carried on intermittently as first disclosed in the patent, in a single Gabbett, by adding the charge, briskly agitating it, stopping the agitation to allow the liquid to come to rest and the air bubbles and attached mineral particles to rise to and through the surface of the liquid and to form a froth floating thereon, and removing the froth by skimming, draining, or overflowing, or by flowing the agitated pulp into a "spitzkast, upcast" (Spec., p. 2, line 2) or otherwise. It may be carried on continuously, as disclosed in the patent, by continuously feeding the ore pulp and oil to an agitating vessel or a series of agitating vessels, continuously flowing out the contents into a separating vessel or vessels, continuously overflowing the froth therefrom and continuously flowing out the residue or tailings from the bottom of the separating vessel or vessels, with classification of these tailings in separate spitzkasten if desired. Also, as disclosed in the patent, air bubbles may be liberated in the pulp to attach themselves to the oiled metallic particles and sweep them to the surface to form the froth, as by superaeration. Also, as disclosed in the patent, the oil may be liberated *in situ* completely disseminated throughout the ore pulp, by introduction in

the form of soluble soap and precipitation by acid, obviating the necessity of other than the most gentle agitation for the purpose of disseminating the oil through the pulp. *The breadth of the disclosure is commensurate with the breadth of the claim.* In the Hyde case the defendant copied the exact methods of the plaintiffs and there was no occasion to consider the superaeration and soluble soap modifications. In the Miami case the defendant used a Callow cell, with agitation by aeration, as the separating vessel, and also used preliminary agitators which both agitated and aerated the pulp. In the Hyde case and in the Miami case the defendants used the proportions of oil specified in this claim. In the present case the appellant from 1911 until the end of 1916 did just what Hyde did. Since then it has at times managed to increase the total amount of oil used to something a little larger than a fraction of one per cent. of oil on the ore but has not succeeded in increasing the mineral-froth-producing oil to anything more than a small fraction of one per cent.

Claim 2 differs from claim 1 in that it adds to what is pointed out in claim 1 that the water shall be "slightly acidified," and the appellant here has always slightly acidified his pulp.

Claim 3 adds to what is pointed out in claim 2 that the mixture shall be warmed. It therefore specifies both acidification and heating. The appellant has used both until recently.

Claim 5 differs from claim 1 only in that the oily liquid is stated to be oleic acid in the proportion of

.02% to .5% on the ore. This claim was only infringed by those procedures of the appellant wherein oleic acid was used, which terminated in 1914. It is an oleic acid claim and therefore its upper limit of .5% on the ore is a limitation restricted in its application to a process employing oleic acid as the oil.

Claim 6 differs from claim 2 in the same respect as claim 5 differs from claim 1, i. e., it adds acidification to what is included in claim 5; and was infringed up to the end of 1914.

Claim 7 differs from claim 3 in the same respects, and also adds the statement that the warming shall be to 30° to 40° Centigrade, i. e., it adds acidification and heating of a specific character to what is included in claim 5. This also is an oleic acid claim and was infringed up to the end of 1914.

Claims 9, 10 and 11 have been limited by the disclaimer and will be next considered.

Claim 12 is the broadest claim wherein it is stated that the oil is a fraction of one per cent. on the ore. The agitation described in this claim is stated to be for the purpose of causing "the oil-coated mineral to form a froth" and the *method of "coating the minerals with oil" is not specified.* If for example diluted soft soap solution were used as the pulp liquor and oleic acid precipitated by sulphuric acid from the pulp liquor and thereby the minerals coated with oil with only gentle agitation, the language of this claim would directly apply even should it be held that the language

of claim 1 did not apply. It has at all times been infringed by the appellant.

DISCLAIMER.

The disclaimer was filed March 28, 1917, following the mandate whereby the decree of the Supreme Court became effective, issued on January 13, 1917. The time taken for consideration of this action was about seventy days, allowing for mail transmission, and was remarkably short when one considers the magnitude of the questions involved in this disclaimer, and the fact that counsel during this period argued the appeal in the Miami case, prepared and filed reply briefs therein, and then prepared for the trial of the present suit, and that the patentees resided abroad and that mail communication abroad was uncertain and greatly delayed by the war.

The Supreme Court did not, as courts often do, direct the filing of a disclaimer. The burden was cast upon parties and counsel of deciding all the momentous questions involved.

After careful examination and consideration of the law and the facts the present disclaimer was filed. It follows exactly the opinion of the Supreme Court, using the identical words of the crucial part of that opinion expressing the views of that court as to the manner in which "the patent must be confined."

The Supreme Court said that the patent in suit was valid as to claims 1, 2, 3, 5, 6, 7 and 12 and infringed

as to those claims, but invalid as to claims 9, 10 and 11 (claims 4, 8 and 13 being stated to be not in issue).

The decree in both its aspects was made expressly as a consequence of the holding that

> "the patent must be confined to the results obtained by the use of oil within the proportions often described in the testimony and in the claims of the patent as 'critical proportions' 'amounting to a fraction of one per cent. on the ore' ".

No other reason is given for decreeing the patent invalid as to claims 9, 10 and 11.

We must therefore conclude that in the judgment of the Supreme Court claims 9, 10 and 11 were not

> "confined to the results obtained by the use of oil within the proportions"

specified.

The mandate of the Supreme Court was issued on January 13, 1917, and was filed in the U. S. District Court for the District of Montana on March 5, 1917 (p. cxi).

Thereupon, and on the 28th day of March, 1917, and many months before appellees' right to petition the Supreme Court for a rehearing (as to claims 9, 10 and 11) and defendant's right to petition for a rehearing (as to the other claims in issue) had expired, Minerals Separation Ltd., one of the appellees here, and the sole owner, then and now, of the letters patent in suit, filed its disclaimer,

> "disclaiming those parts of the thing patented which your petitioner does not choose to claim or hold by virtue of said Letters Patent No. 835,120, does hereby disclaim from

> claims 9, 10 and 11 of said Letters Patent No. 835,120, any process of concentrating powdered ores excepting where the results obtained are the results obtained by the use of oil in a quantity amounting to a fraction of one per cent. on the ore'' (p. cxv-cxvii; cxxii-cxxxiv).

This disclaimer, in purpose and in terms, cut off, and excluded, from the subject matter of claims 9, 10 and 11, all the excess, whatever it might be, that was included within those claims over and above what the Supreme Court had said the patent must be confined to; and in legal effect, therefore, it confined claims 9, 10 and 11 to the subject matter to which the Supreme Court had said the patent must be confined.

On its face the disclaimer refers to the Supreme Court decision in the Hyde case as advising Minerals Separation, Ltd., of the infirmity of the patent, in so far as concerns claims 9, 10 and 11, and so it must be interpreted in the light of that decision. And in its disclaiming part it employs the very words of the decision.

Whatever the overplus found by the Supreme Court to be within the inclusion of claims 9, 10 and 11 was, that overplus is disclaimed by the disclaimer, and nothing more is disclaimed, and the disclaimer therefore leaves claims 9, 10 and 11 ''confined'' (as claims 1, 2, 3, 5, 6, 7 and 12 of the patent were found to be already 'confined'' without any disclaimer)

> ''to the results obtained by the use of oil within the proportions often described in the testimony and in the claims of the patent as 'critical proportions' 'amounting to a fraction of one per cent. on the ore' ''.

The overplus in claims 9, 10 and 11 must have been distinguishable to the Supreme Court, for its presence constituted the basis of the holding of invalidity as to claims 9, 10 and 11; and what is left after the disclaiming of that overplus must have been equally distinguishable to the Supreme Court, for it constituted the basis of the holding of validity of claims 1, 2, 3, 5, 6, 7 and 12.

Appellees in their supplementary and amended bill of complaint filed May 1, 1917 (p. lxxiv-cxx), pleaded the filing of the disclaimer (par. 5, p. lxxvii), the consequent validity of claims 9, 10 and 11 as limited by that disclaimer, and that the appellant had infringed same (par. 7, p. lxxvii) and prayed for an injunction and an accounting as to same (p. lxxxii).

Appellant filed an answer to the supplemental bill of complaint on May 4, 1917 (pp. cxx-cxxiv) in which and especially in paragraphs V (p. cxxiii) and X (p. cxxvi-cxix), it pleaded that the disclaimer was in effect and in law no disclaimer at all, and in any event that it had been filed too late, that is to say, not without unreasonable neglect and delay, and that the patent in suit is in consequence invalid and void not only as to claims 9, 10 and 11 but also as to claims 1, 2, 3, 5, 6, 7 and 12, and all other claims.

Appellant's brief does not contend as was vigorously contended in the court below that the disclaimer was filed too late, but only that it is not a disclaimer and therefore no disclaimer has been filed and that it is now too late to file a disclaimer. We do not concede that it is now too late to file a disclaimer, but the argu-

ment is now limited to the question whether the disclaimer was a proper disclaimer under the statutes.

All questions arising under the disclaimer were fully argued in the court below on April 16, 1917, the first day of the trial, on objection made to the offering of the disclaimer in evidence (Vol. 5, pp. 2212-2263) and were decided by the court in an opinion found at pages 2263 to 2267, the court overruling the objections.

The disclaimer questions were argued again at the end of the trial but the court below did not disturb its decision and entered a decree holding the patent in suit good and valid in law as to claims 1, 2, 3, 5, 6, 7 and 12 and as to claims 9, 10 and 11 as limited by disclaimer, and infringement of same, and for an injunction and accounting.

THE DISCLAIMER WAS A PROPER DISCLAIMER UNDER THE STATUTES.

The statutes in question are Sections 4917 and 4922, U. S. R. S.

Those statutes prescribe that whenever without fraud a patentee has *claimed* more than that of which he was the original and first inventor or discoverer, his patent will be valid (Section 4917), and he may maintain an infringement suit at law or in equity (Section 4922), as to any or all of that part which is truly and justly his own, if it is a material and substantial part of the thing patented and definitely distinguishable from the parts claimed without right, provided such patentee, his executors, administrators, heirs or assigns make disclaimer

without unreasonable neglect or delay of such parts of the thing patented as he shall not choose to claim or hold by virtue of the patent.

In the case at bar no fraud in originally making claims 9, 10 and 11 is alleged or proved. The Supreme Court in the Hyde case held that in and by claims 9, 10 and 11 the patentees had claimed more than that of which they were the original and first inventors or discoverers. The Supreme Court at the same time held that the patentees had made an invention of importance, and defined it, and by necessary implication held that that invention was definitely distinguishable from the parts claimed in claims 9, 10 and 11 without right. For claims 1, 2, 3, 5, 6, 7 and 12 were upheld as valid and infringed in the same breath in which claims 9, 10 and 11 were held invalid, and in both cases because it was held that the patent must be confined "to the results obtained by the use of oil within the proportions often described in the testimony and in the claims of the patent as 'critical proportions' 'amounting to a fraction of one per cent. on the ore.' "

Claims 9, 10 and 11 were held invalid because broader in scope than the actual invention. They covered and included the process that constitutes the actual invention but they also covered and included processes that were not the actual invention. The disclaimer disclaims that overplus, that excess over and above the real invention, and disclaims the whole of that overplus or excess. The disclaimer prunes down the claims to a scope no broader than the real invention. Claims 9, 10 and 11, without the disclaimer would have been infringed by

one who made use of the real invention. They would also have been infringed by one who employed other and different processes—for so the Supreme Court has held. Claims 9, 10 and 11 as limited by the disclaimer would be infringed by one who used the real invention, but they would not be infringed otherwise. The disclaimer has therefore cured those claims of the patent from the vice of claiming more than that of which the patentees were the original and first inventors or discoverers.

Nothing has been added by the disclaimer to the description or to the claims or to the breadth or scope of the claims. As to the description nothing has been changed or altered—not a word or an implication. As to the claims (9, 10 and 11) they have merely been narrowed in scope to eliminate from them, and with the legal effect of eliminating from them, the extra breadth or scope or overplus of scope that caused the Supreme Court to hold them invalid.

This limitation of the scope of a claim by cutting off so much of its inclusion as extends it out beyond the confines of the real invention is the very purpose and idea of a disclaimer under the law and the practice.

Claims 9, 10 and 11 were held invalid by the Supreme Court, not because they would not be infringed by the practice of the real invention of the patentees, but because they might also be infringed by the practice of processes and procedures that would not embody the real invention in that those processes obtained results different from those obtained by the use of oil in a quantity amounting to a fraction of one per cent. on the

ore. Those claims since the date of filing of the disclaimer do not cover or include any processes or procedures except one within their terms where the results obtained are those obtained by the use of oil in a quantity amounting to a fraction of one per cent. on the ore.

Thus claim 9, since the entering of the disclaimer, is, in contemplation of law, only for the process of concentrating powdered ores, which consists in separating the mineral from the gangue by coating the mineral with oil in water containing a small quantity of oil, agitating the mixture to form a froth, and separating the froth, where the results obtained are those obtained by the use of oil in a quantity amounting to a fraction of one per cent. on the ore.

Similarly claim 10 is for that process where the mixture is warmed; and claim 11 is for that process when there is added a quantity of acid insufficient to cause chemical action on the metalliferous minerals present.

Illustrations of similar disclaimers upheld as valid and effectual under the law are numerous. In *Carnegie Steel Co. v. Cambria Co.*, 185 U. S. 403,

> "the disclaimer was not of a claim, but of certain statements in the specification, which if retained, might be construed to have the effect of illegally broadening the second claim".

In that case, apparently, the claim was susceptible either of an illegally broad or of a legally narrow construction, and the court allowed as a proper and valid disclaimer the disclaimer of certain statements in the specification that might have imported an illegal breadth

into the claim. All the more clearly within the statute is the case at bar, where the illegal broadening of the claim is found not in any statement of the specification but in the language of the claim itself. If a disclaimer of any illegal broadening of a claim implied from a statement in the specification is within the statute, much more is a disclaimer of an illegal broadening of a claim expressed on its face, for the latter is what the statutes expressly and explicitly address themselves to.

In the case under citation the Supreme Court remarked:

> "As we had occasion to observe in *Sessions v. Romadka,* 145 U. S. 29, 'the power to disclaim is a beneficial one, and ought not to be denied except where it is resorted to for a fraudulent and deceptive purpose' ".

The Supreme Court cites *Hurlbut v. Schillinger,* 130 U. S., 456; *Schillinger v. Gunther,* 17 Blatch., Fed. Cases No. 12458; *Schwartzwalder v. N. Y. Filter Co.,* 66 Fed. 152.

In *Silsby v. Foote,* 14 Howard 218, 221, the claim was for the application of a certain automatic damper control for a stove "or other structure." It was shown that the same automatic control was old to regulate the heat of other structures than a stove. Thereupon the patentee entered a disclaimer,

> "to so much of said claim as extends the application of the expansive and contracting power of a metallic rod by different degrees of heat to any other use or purpose than that of regulating the heat of a stove in which such rod shall be acted upon directly by the heat of the stove or the fire which it contains".

The Supreme Court sustained the disclaimer.

In *Tuck v. Bramhill,* 6 Blatch., 95, 24 Fed. Cas., 259, the claim was for a packing for pistons of a certain construction, "with or without a core." After testimony had been taken showing the structure old without the core, plaintiff filed a disclaimer "to that part of the claim which covers the packing therein described without a core," thereby limiting the claim to the peculiar packing recited when employed with a core, and the validity of that disclaimer was at issue. The court said

> "it having been shown that the forming of the roll in the manner described, without the core, was old, the next question is whether the plaintiff could disclaim, as he has attempted to do, the forming of the roll without the core, and so limit the claim to forming of the roll with the core".

The court upheld the disclaimer as valid.

In the *Electrical Accumulator Co. v. Julien Co.,* 38 Fed., 117, the claim was for an electrode of a secondary battery coated with a certain active layer by galvanic action or chemical precipitation or otherwise. The specification had described the application of the active layer mechanically in the form of a paint, paste or cement, and also its application by galvanic deposition, and also its application by chemical precipitation. The court found that the real invention was the application of the active material mechanically in the form of a paint, paste or cement. The court also found that it was old to apply the active material mechanically in the form of a dry powder. The court suggested that the claim might be limited by disclaimer to the real invention,

and plaintiff subsequently filed a disclaimer of any and every way of coating an electrode with an active layer in which the active layer was wholly applied otherwise than in the form of a paint, paste or cement practically insoluble in the electrolytic liquid, and the disclaimer was upheld as valid. Incidentally the disclaimer cut out certain phrases from the specification descriptive of other ways of coating an electrode than by mechanically applying in the form of a paint, paste or cement.

In *Thompson v. Bushnell,* 96 Fed. 238, a patent was involved which had been held invalid or not infringed in *Thompson v. Jennings* (66 Fed. 57; on appeal 75 Fed. 572) where the Circuit Court of Appeals had intimated that the patent could be sustained only if limited to hack saws and band saws. On this suggestion the owners of the patent filed a disclaimer in the Patent Office "of so much of said claims as covers circular saws and back saws, leaving said claims to include only hack saws and band saws." The Circuit Court of Appeals sustained this disclaimer. The court said:

> "The phraseology of the claims, however, read in connection with the specification, was broad enough to cover all four varietes of the class known as 'metal saws', although as to two of them it was useful, and as to the other two useless. Certainly there was an actual, separable invention. In view of the fact that the four varieties of this class of saw were well known to the trade and their difference clearly recognized, as the evidence shows, no amended specification or supplemental description is required to make the new claim intelligible, and a disclaimer of circular and back saws leaves the patent in force as to the other varieties of the class."

The defendant argued that the disclaimer was not a proper one, the theory being that there was no separate

invention in its application to different kinds of saws, and that a restriction of the claim to any one kind of saw was practically adding to the claim a new element, to wit: the kind of mounting, different kinds of saws being distinguished from each other only by their particular kind of mounting. But the court held to the contrary.

In *Schwartzwalder v. N. Y. Filter Co.,* 66 Fed. 152, a disclaimer was upheld which struck out from the specification certain broadening language which made the claim by construction too broad, in view of the state of the art. In that case the disclaimer was of a recital in the specification that had been intended to enlarge the scope of the claim. The court said:

> "The disclaimer consequently operates only to expunge from the claim what otherwise would, by force of the recital, be incorporated into it constructively. * * * The patent, after the disclaimers, is to be read exactly as though the recital had never been inserted."

It was urged by the defendant that the defense of want of novelty should be tested by the original terms and scope of the claim, but the court said:

> "We are aware of no principle which permits a patent to be defeated for want of novelty in respect to the subject matter which has been eliminated from it by a disclaimer. The office of the disclaimer is to enable a patentee to save himself from the peril of such a defense. Matters which have been properly disclaimed cease to be a part of the invention, and, as was said by the Supreme Court in *Dunbar v. Myers,* 94 U. S. 104: 'It follows that the construction of the patent must be the same as it would be if such matter had never been included in the description of the invention or the claims of the specification.' "

In *Simplex Co. v. Pressed Steel Car Co.,* 189 Fed. 70, the Circuit Court of Appeals for the Second Circuit sustained a disclaimer to a part of the specification which said

> "that, though the best results are obtained by keeping the tension member straight, if the construction be varied by bending the tension member and keeping compression member straight it will still be within the spirit of the invention".

The effect of the disclaimer was held to be to limit the patent to a bolster having a straight tension member and a compression member with its end bent. The court said:

> "The effect of the disclaimer was not to broaden the claim, but to limit it to the construction described and shown, of a straight tension member and a bent compression member. Until this disclaimer was allowed it was possible to contend for a construction of claim 6 broad enough to include a structure described in the language disclaimed, viz., a straight compression member and a bent tension member. That this was a proper case for a disclaimer and that the language disclaimed is no longer a part of the specification, are propositions which are sustained by the following authorities: *Dunbar v. Myers,* 94 U. S. 187; 24 L. Ed. 34, and cases cited in *Accumulator Co. v. Julien* Co. (C. C.), 38 Fed. 117, 133-136."

In *Libbey v. Mt. Washington Glass Co.,* 26 Fed. 757, Judge Colt said:

> "The claims of the patent are as broad as the specification, and are not limited to any particular compound. Since bringing suit, the plaintiff had filed a disclaimer under the statute, in which he limits his claim to the gold-ruby compound. This the plaintiff had a right to do. Under the authorities cited by the plaintiff, this was a patent where a part could be properly disclaimed. It

did not require the importation of anything new in the specification, but simply the elimination of a part of what was originally claimed. A disclaimer can be made after suit is commenced."

In *Marconi Wireless v. De Forest,* 243 Fed. 560, the Circuit Court of Appeals for the Second Circuit sustained a disclaimer similar to that in the case at bar. In that case the claims in suit were as follows:

"1. The combination of a vacuous vessel, two conductors adjacent to, but not touching each other in the vessel, means for heating one of the conductors, and a circuit outside the vessel connecting the two conductors."

"37. At a receiving station in a system of wireless telegraphy employing electrical oscillations of high frequency, a detector comprising a vacuous vessel, two conductors adjacent to, but not touching, each other in the vessel, means for heating one of the conductors, a circuit outside of the vessel connecting the two conductors, means for detecting a continuous current in the circuit, and means for impressing upon the circuit the received oscillations."

After action begun, plaintiff entered a disclaimer "to the combination of elements set forth in claim 1, * * * except as the same are used in connection with high-frequency alternating electric currents or electric oscillations of the order employed in Hertzian wave transmission," and also to certain words of the specification referring to low frequency currents.

The court said (p. 565):

"The contention that Fleming's patent, whatever its original merit or lack thereof, was voided by an unlawful disclaimer, is without substance. The mistake (if there was one) was in claiming something not needed, and the disclaimer abandoned what was not wanted, without broadening or enlarging any claim; it also left the claims

> fully supported by the original specification. No injury to defendant, or any one else, is shown. The procedure is within *Carnegie Steel Co. v. Cambria Iron Co.*, 185 U. S. 403; 22 Sup. Ct. 698; 46 L. Ed. 968, and our former decisions in *Simplex etc. Co. v. Pressed Steel Co.*, 189 Fed. 70; 110 C. C. A. 634, and *Strause etc. Co. v. Crane Co.*, 235 Fed. at page 129; 148 C. C. A. 620."

In *Page v. Dow,* 200 Fed. 72, Judge Hazel sustained as valid a disclaimer which practically changed the words "constantly acting source of power" in a combination claim into the words "constantly rotating drive shaft."

The court said:

> "The defendant insists that the disclaimer changes the character of the invention and substitutes a different element, but I am persuaded by the proofs to the contrary. To substitute the words 'constantly rotating drive shaft' for the words 'constantly acting source of power' did not, in my opinion, alter or change the invention; nor was it the addition of an equivalent element for one that had been abandoned. The effect of the disclaimer was merely to limit the original claim, which was thought too broad, to a constantly rotating drive shaft actuated by a constantly rotating motor. Disclaimers of this description, when filed within a reasonable time of the discovery that a disclaimer is necessary, have many times received the approval of the Federal courts." See authorities cited.

For a most excellent discussion of the whole law of disclaimer see *Suddard v. American Motor Car Co.,* 163 Fed. 852.

Under these and other similar authorities that might be cited, it appears that in the case of a claim that is too broad, broader than the real invention, or that is ambiguous and so may be construed more broadly than the

real invention, the patentee may disclaim the excess over and above what he has invented and make his patent in that way, and to that extent, specific and definite and free from ambiguity.

There is nothing in the authorities or in the Statute, or in reason, that would require the patentee to give up and disclaim the whole of claims 9, 10 and 11, for that would be to disclaim the part which he has invented and to which he is justly entitled, as well as the excess over and above that part. By disclaiming the excess he retains only that part to which he is entitled. There is nothing in the law which would require him to give up the portion of these claims to which he is entitled. The law does not require that an entire claim be disclaimed, but only the excess over and above what has been invented.

The statutes provide a remedy by re-issue (Section 4916) whenever a patent is inoperative or invalid by reason of a defective or insufficient specification, or by reason of the patentee claiming as his own invention or discovery more than he had a right to claim as new. The remedy by disclaimer applies also to a case where the patent is invalid by reason of the patentee claiming as his own invention or discovery more than he had a right to claim as new. The remedy by disclaimer is proper where the part that is left was truly and justly the patentee's invention and was a material and substantial part of the thing patented and is definitely distinguishable from the parts claimed without right. In such a case the remedy apparently might be either by

disclaimer or by re-issue. Where, however, there is any change or alteration *in the specification* (other than mere excision of specific statement) the remedy cannot be disclaimer and must be by re-issue. In other words, if the specification is defective or insufficient in any respect the remedy must be by re-issue. For example, if the claim is narrower than the real invention, the patent is regarded as inoperative and the specification as defective or insufficient for the purpose of covering the real invention, and in such case the only remedy is by re-issue. This broadening of the claim out to the limits of the real invention has been the usual purpose of re-issuing and such re-issues have been upheld where they have not changed or altered the invention and have been promptly applied for. A re-issue to narrow the scope of a claim is unusual except where some change has coincidently to be made in the specification or new claims are to be added. Where nothing but diminution of claim is sought and the part left is definitely distinguishable from the part claimed without right, there the remedy by disclaimer is appropriate and effectual. This matter is discussed in many of the cases cited and in others. See *Carnegie Steel Co. v. Cambria Co.,* 185 U. S. 403. In that case the court through Mr. Justice Brown said:

> "Had the purpose of the disclaimer been to reform or alter the description of the invention, or convert the claim from one thing into something else, it might have been objectionable, as patents can only be amended for mistakes of this kind by re-issue. But the disclaimer in this case appears to have been made to obviate an ambiguity in the specification, and with no idea of obtaining the benefits of a re-issue. If the [disclaimed] clauses had the effect of broadening the patent the disclaimer removes

> the objection. If they did not, the disclaimer could do no harm, and cannot be made the subject of criticism."

In the case at bar the disclaimer has no purpose or effect to reform or alter the description of the invention, or to convert the claim from one thing into something else. But it has been made to remove from the scope and purview of claims 9, 10 and 11 all that part which in the judgment of the Supreme Court was claimed there without right, and so to obviate the objection to the patent that it claimed more than the patentee had the right to claim as new.

CLAIMS VALIDATED BY DISCLAIMER.

Claim 9 as it appears in the patent, with the addition thereto of the exact limiting words of the disclaimer, is as follows:

> "9. The process of concentrating powdered ores which consists in separating the mineral from the gangue by coating the mineral with oil in water containing a small quantity of oil, agitating the mixture to form a froth, and separating the froth,"

when

> "the results obtained are the results obtained by the use of oil in a quantity amounting to a fraction of one per cent. on the ore".

It is to be noted that claim 9 corresponds very closely in its language to claim 12 and that like claim 12 it prescribes first "coating the mineral with oil in water" and thereafter "agitating the mixture to form a froth." But its language is broader than claim

12, because the words "to cause the oil-coated mineral to form a froth" of claim 12 are replaced by the words "to form a froth" in claim 9. It does not therefore specify that the froth is a mineral froth, as does every claim held valid by the Supreme Court, but this unnecessary breadth is cured by the disclaimer. The concluding words of claim 9 are also somewhat broader than those of claim 12, the words "separating the froth from the remainder of the mixture' of claim 12 being replaced by "separating the froth." Here also the unnecessary breadth of language has been cured by the disclaimer. Claim 9 is the broadest claim of the patent, and as limited by the disclaimer gives to the patentees that broad protection which is as wide as the invention and covers the new art which the patentees have added to the wealth of the metallurgical world, the process of air-froth flotation.

Claim 10 adds to claim 9 the words "warming the mixture," i. e., warming the pulp. This covers everything that the appellant has done up to the end of 1916 and at times thereafter.

Claim 11 adds to claim 9 the words "and a quantity of acid insufficient to cause chemical action on the metalliferous minerals present," i. e., it adds acidification to claim 9 (but not heating) with the qualification that the quantity of acid used shall not be sufficient to cause chemical action on the metalliferous minerals of the ore. This does not exclude chemical action on the gangue constituents of the ore, such as calcite, but only such decomposition of the metalliferous minerals, the

sulphides of the values, and we may add substantial and not negligible decomposition thereof. All of appellant's procedures have employed acid in such manner as to be within the language and scope of this claim.

FILE OF THE PATENT IN SUIT.

This document (printed Vol. 4, pp. 1974-2010) shows that the Patent Office, as a result of its search against the patentability of the invention, did not cite any prior patent or publication whatsoever against any of the claims in issue, or indeed against any claim at any time presented which included the production of froth and the separation of the froth. It further appears that all of the claims in issue were allowed as filed. Therefore there is absolutely nothing limiting in the file-record of the application, and the claims are fully entitled to the broadest construction which the prior art permits. Although the file-record was before the Supreme Court, the Supreme Court did not deem the matter worthy of mention. A consideration of the details of the prosecution of the application is unnecessary.

Nevertheless appellant's counsel in the supplement to their brief, at page 8, quote rejected claim 12 and its rejection by the Patent Office, although they express no conclusion from this part of the history of the patent. This claim was as follows:

> "12. The process of concentrating powdered ore which consists in separating the minerals from gangue by coating the minerals with oil in water containing a fraction of 1% of oil on the ore, and recovering the oil-coated minerals" (Vol. 4, p. 1996, upper and cancelled claim 12).

The language of this claim is broad enough to describe a metal-sinking process. There was no suggestion in this claim of aeration or of the action of air bubbles. There was no suggestion of agitation or froth formation or even of flotation. There was absolutely no intimation in this claim that the process produced a mineral froth. It was broader than claim 9 of the patent because it did not even say that a froth was formed. According to this claim the metalliferous minerals might be coated with oil by using soap solution as the pulp liquor, precipitating the oil *in situ* by sulphuric acid, as described in the specification, and thereby producing oil-coated mineral without agitation, and then recovering the oil-coated mineral as a film float or in any manner whatsoever, even by sinking it if that were practicable. The Patent Office Examiner conceded that this claim expressed a novelty over the Sulman and Picard patent No. 793,808 (printed Vol. 4, pp. 2146-2152) the application for which was co-pending with the application for the first patent in suit, but which had issued at the late stage in the prosecution of the application for the patent in suit at which this question arose. That novelty was

> "coating the minerals with oil in water containing a fraction of one per cent. of oil on the ore".

The Examiner's position was that this expressed "merely a difference of degree" (p. 2004) over 793,808 and one of the Cattermole metal-sinking process patents No. 763,260 (printed Vol. 3, pp. 1250-1253), i. e., it was a claim for a reduction in the amount of oil *per se,*

which, although concededly new, could not alone be made the subject of a patent.

This action by the Patent Office conceded the novelty in the minute oil proportion which characterizes the invention and merely objected to a claim which did not include the essentials of the process. The Supreme Court of the United States in the Hyde case reached the same conclusion as to the novelty of the minute oil proportion, and broadly sustained claim 12 of the patent, which is identical in language with abandoned claim 12, except for the added words "agitating the mixture to cause the oil-coated mineral to form a froth," as a claim properly defining the invention.

In the decision of this court in the Hyde case reference is made to the cancellation of this original claim 12 as constituting an admission by the patentees that mere novelty in the amount of oil was unpatentable (214 Fed. 109). No exception is taken to this conclusion. The novelty consisted in the successful utilization of an air-lift (as contradistinguished from an oil-lift), and the production of an air-froth (as contradistinguished from an oil layer or an inflated magma or a film or skin float) carrying the mineral particles. The essentials of the invention were not pointed out in this abandoned claim 12, and it was properly abandoned.

HISTORY OF THE INVENTION—RESEARCH PERIOD PRECEDING DISCOVERY.

In the Hyde suit the defendant issued an open commission to London for the taking of testimony in his behalf, and called as his witnesses Messrs. Sulman, Picard and Ballot, the joint inventors, and Mr. Arthur Howard Higgins, their metallurgist, who actually carried on under their direction the experiments which resulted in the discovery of the invention. The result of this testimony in strengthening the presumptions arising from the patent itself appears in the opinion of the Supreme Court of the United States, wherein this testimony, which is also before this court, is referred to at some length (Opinion, pages 4, 5).

During the year 1902 and succeeding years, and until March, 1905, when the process of the patent in suit was discovered and invented, Messrs. Sulman, Picard and Ballot were at work studying and improving the Cattermole metal-sinking process (Ballantyne, Vol. 2, pp. 362-364). Their investigations covered a wide range, including painstaking but futile efforts to utilize air and gases in flotation, but failed to develop during this period any procedure capable of taking the place of the Cattermole metal-sinking process. Occasional flotation of metal or failure of metal to sink in the Cattermole upcasts, was troublesome, as it meant of course that the metal which did not sink went to waste with the gangue, but nevertheless metal flotation was investigated, and the ingenuity of the inventors was applied to it, and it was tested and to some extent patented, and finally dropped as practically useless, except as a tail-end

annex to the Cattermole metal-sinking process for the recovery from the final tailings of that process, by film or skin flotation, of a small fraction of metallic matter which the Cattermole process was unable to recover. This appears in the report of May 18, 1904, of Messrs. Sulman and Picard to the plaintiff reporting the joint work of Messrs. Sulman, Picard and Ballot (Sulman, Vol. 4, p. 1669, XQ156; p. 1613, Q33) under the heading "Clean-up of Dirty Sands" (Vol. 3, pp. 1078, 1079). This was their final solution of the utilization of flotation ten months before the discovery of the process of the patent in suit, and all their further efforts were concentrated upon the improvement of the Cattermole metal-sinking process.

In July, 1903, Messrs. Sulman and Picard invented the process disclosed in their patent No. 793,808 (Sulman, Vol. 4, p. 1603, Q4, Qs6-8; Picard, p. 1683, Qs5, 6). This process, although never developed to any utility, was patented and the patent was pleaded and put in evidence in the Hyde suit (printed Vol. 4, pp. 2146-2150). In this process an effort was made to recover the metal by flotation as a metallic film on the surface of the water of particles brought to the surface by air or gas bubbles and left floating at the surface by the bursting of the bubbles on their emergence from the liquid, or deposited on the surface from above and floating thereon as a metallic film. Efforts to develop it were abandoned because it was a hopeless process (Sulman, Vol. 4, p. 1623).

In August, 1903, through the publication of the British patent to Froment No. 12,778 of 1902 (Sulman,

p. 1605, Qs9, 10; Ballot, p. 1743, Q88), they learned that the idea of floating oily flocks of metallic particles by bubbles of gas chemically generated had been anticipated by Froment. It was this circumstance which induced them to purchase the Froment patent and all improvements thereon for £225 sterling, or a little more than $1,000 (Vol. 3, p. 1213), negotiations for that purchase having been commenced in August, 1903 (Ballot, Vol. 4, p. 1771, RDQ149), and the purchase completed in November, 1903 (p. 1770, RDQ144), when they still had hopes of developing something out of their film flotation process.

Another flotation process produced while the Cattermole metal-sinking process was being developed was that which is disclosed in the Cattermole, Sulman and Picard patent No. 788,247, known as the Soap and Flotation patent (Sulman, Vol. 4, p. 1662, Q143; p. 1605, Q8). This patent (pleaded and put in evidence in the Hyde suit, printed Vol. 4, pp. 2143, 2144) is merely for the application to all that was known of the flotation of metals in 1903, of the operation wherein soluble soap is dissolved in the water of an ore pulp, the soap is decomposed by sulphuric acid, and oleic acid is precipitated throughout the mixture to coat the metallic particles, and after the metallic particles have been concentrated they are treated with an alkali to clean off the oil and to again form soap which can be again used in the process.

The two reports covering the period of the initial work in film flotation, those of May 5, 1903 (Vol. 3, p. 1027), and September 24, 1903 (p. 1031), are entitled

"Cattermole Process" and limited to the work thereon. The first reference in the reports to any effort to utilize flotation appears in the report of March 4, 1904 (pp. 1064-1067). These tests were incidental to the completion of an experimental Cattermole metal-sinking plant which Mr. Chapman took with him to Australia in April, 1904, for the purpose of testing it there and erecting there a large commercial plant to carry on the Cattermole process. The experiments are described in the report under the heading "Flotation Factor Used," but it appears that what was thus described as flotation was merely the upward movement of thickly coated oiled metallic particles in suspension in an up-current of water in an upcast as a tail-end treatment for the recovery of a very small fraction of the metal in the tailings. Two tests are thus described, and in the last run, No. 4, chemical generation of gas was tried, but the "concentrates obtained 1.6%" of the metal originally in the ore (p. 1067), were not encouraging. We therefore find that in the next report dated April 19, 1904 (pp. 1068-1074), four days after Mr. Chapman had sailed for Australia taking with him the experimental Cattermole plant (p. 1073), further work on a duplicate of that plant was supplemented by vanning experiments, and chemical generation of gas was tested therewith, and modifications of shaking tables were devised, and finally on May 18, 1904, we find the climax of all flotation work prior to the discovery of the process of the first patent in suit in the following statement under the heading "Clean up of dirty sands":

> "This work gives considerable promise of early success As foreshadowed in our last, we have converted the small

> model vanning table into a 'bumping' table, and have removed the riffles. By this means on small samples of dirty sands we have been able to clean up nearly all the contained oiled mineral, and to produce sharp, clean sands without the use of any gas producing carbonate, etc., thus effecting considerable economy both in acid and carbonate. Under these conditions mere contact of the oiled particles with air when exposed on the surface of the table is sufficient to insure their flotation removal from the sands" (Vol. 3, p. 1078, 1079).

This skin flotation produced by exposing the metal particles to air and then permitting them to float by surface tension was actually used in the Cattermole plant erected in Australia (Chapman, Vol. 2, pp. 244, 245, Q20), and the Cattermole plant, with a capacity of treating 100 tons a day of twenty-four hours (p. 243, Q18), was completed and started in operation in April, 1905 (Q21). The oil consumption, however, alarmed the mine owners, and the plant, after running for a few days, was changed over so as to spoil the Cattermole process and make all the recovery on the skin flotation tables (Q22). This occurred after the discovery of the process of the patent in suit, but in ignorance thereof, as will later appear.

HISTORY OF THE INVENTION—DISCOVERY.

The discovery was made in the week between March 3 and March 10, 1905. The work of the laboratory for ten months had concerned only the Cattermole process. A Cattermole plant capable of treating 100 tons of material per day was in process of erection at Broken

Hill, Australia, and the work in London was for the purpose of acquiring information which would be useful in carrying on the Cattermole process. It had been found that heat assisted this process. It had been found in the laboratory that a single stage agitation (Vol. 3, pp. 1088, 1089, par. 5), reduced the oil consumption down to the lowest point ever reached in carrying on the Cattermole process, to wit: 1.5% of the ore (pp. 1093, 1094, 1095, 1096), and a very comprehensive investigation was being carried on of the influence of seven factors "on granulation" (pp. 1099, 1100). Six of these subjects of investigation were the essential factors which contributed to the discovery. These six factors as stated by Mr. Ballantyne (Vol. 2, pp. 369, 370) may be paraphrased as follows:

(1) Agitation and aeration such as was obtainable in the Gabbett or cone mixer,

(2) The use of oleic acid in place of the emulsions which characterized the earlier Cattermole work,

(3) Heating of the pulp,

(4) Fine crushing without desliming,

(5) Reduction of the quantity of oil, to be continued regardless of results, and the experiments fully reported,

(6) Acidification of the pulp.

When these factors were assembled and the quantity of oil was reduced step by step to the lowest limit and the work was carefully, accurately and thoroughly done, we now know that the discovery of the process in suit was inevitable.

Mr. Arthur Howard Higgins carried on these experiments under the direction of the inventors. He testifies as to having received instructions to carry out these

experiments (Vol. 4, pp. 1801, 1802, Qs63-66), and that these instructions were to start with "the upper limit of Cattermole's specified quantity, and reduce this as far as possible. In other words to find the lowest limit at which results could be obtained by the use of oil" (pp. 1817, 1818, XQ139). Contrasting these investigations with his earlier work, he says as to this earlier work, that the quantity of oil "was always adjusted to give good granulation" (p. 1798, Q43), and further:

> "Q44. In adjusting the oil to give the best granulation, I presume you experimented with different quantities of oil?
>
> A. Yes, there may have been different quantities, but whenever the granulation became imperfect by reason of the drop in the quantity of oil, the oil was naturally increased" (p. 1798).

Three sets of documents written at the time record the discovery. They are the reports of Messrs. Sulman and Picard, the reports of Mr. Higgins, and the weekly letters of Mr. Ballot to Australia. First we have the Higgins Report of March 2, 1905 (Vol. 3 pp. 1091-1097), and the Sulman and Picard Report of March 3, 1905 (pp. 1098-1106) describing the investigations up to this date and the scheme thereof, with no mention except of granulation. Then the Higgins Report of March 16, 1905 (pp. 1108-1112), detailing the crucial experiments and announcing the result. The opening statement of this report is

> "The effect of diminishing the percentage of oleic acid is to alter the type of oiling; the higher percentages producing granules, and the lower ones froth" (p. 1108).

In the carefully tabulated description of experiments we find that with oil "0.32% on ore," the "float vastly increased," and that with oil "0.1% on ore," again the "float vastly increased" (p. 1109). Experiments were tried with one-tenth of one per cent. of oil, and variations of the time of agitation, 4¾ minutes, 8 minutes, 12 minutes and 10 minutes, and the last experiment (pp. 1109, 1110) with "5cc. oleic acid" (one-tenth of one per cent.) and ten minutes agitation, was selected for analysis, and the froth concentrates were found to have recovered 87% of the metals.

The weekly letters of Mr. Ballot to Australia are only copied in the record so far as pertinent. On March 3, 1905, Mr. Ballot wrote sending copies of the Sulman & Picard Report of March 3, 1905 (Vol. 4, p. 1717). On March 10, 1905, six days before Mr. Higgins' report of the discovery, Mr. Ballot wrote as follows:

> "I am pleased to tell you that during the week we have made some very important discoveries which will, I think, almost revolutionize our processes by way of simplifying and cheapening the same. I hope that by next mail the work will be sufficiently far advanced to send you full particulars. Several points have yet to be determined and the discoveries are of such a nature that we have decided to take our expert and counsel's opinion thereon with a view to assuring ourselves that we can get good protection under patents. I may mention for your private information that we do not use more than 0.1 per cent. of oleic acid per ton of ore and although we have not assays out that the recoveries will be very satisfactory" (pp. 1717, 1718).

This is the earliest document describing the invention, and fixes the date of invention as between March 3 and March 10, 1905. It shows Mr. Ballot's full knowledge

and appreciation, and that patenting was even then under consideration.

One week later, on March 17, 1905, Mr. Ballot wrote, giving a remarkably full description and enclosing a copy of Mr. Higgins' report of the day before, "received this morning" (pp. 1718-1720). Every feature of the invention is accurately described.

The evidence as to instructions to Mr. Higgins, aside from his own frank statements above noted, is full and complete (Ballot, pp. 1756, 1757, Q120; p. 1758; XQ127; Sulman, pp. 1645, 1646, Qs100-104; Picard, p. 1686, Q18). Mr. William Ballantyne, the British patent agent who prepared the patent application, was frequently consulted (Vol. 2, pp. 364-366, Q10). He testifies as to the assembling of the factors, the drawing up of the series of tests, the declared intention to "reduce the proportions of oil to a vanishing point" (p. 368), and the disclosure to him on one of the days between the 8th and 15th of March, 1905, by Messrs. Sulman, Picard and Ballot of "their startling discovery of the agitation froth process" (p. 368) and describes a demonstration made to him early in April, 1905, which, with his full knowledge of all that had been done before, he regarded as "little short of a miracle" *(idem)* He also describes the diligent following investigations resulting in the production of the continuous apparatus shown in the patent (p. 371).

This brings us to the Sulman & Picard Report of May 3, 1905, reporting the work done up to that time in working out "the new method of oil concentration" in detail

for forwarding to Australia (Vol. 3, p. 1113). The report says:

> "In determining the lowest limit of oleic acid which could be employed in granulating, it was found that granulation practically stopped at a range of about 0.5 per cent. of oleic acid on the mineral [ore] (60 mesh Broken Hill), in an acid circuit somewhat below 1 per cent. in strength.
>
> A certain amount of black mineral froth was, however, noticed as a result. On successively decreasing the amount of oleic acid *below* .5 per cent. it was found that whereas granulation ceased there was a growth in the amount of mineral float-froth under these conditions, and that the production of such float-froth appeared to reach a maximum when about .1 per cent. of oleic acid on mineral was used. This froth on collection was found to consist of oiled mineral slimes mechanically holding more or less coarse (oiled) mineral particles, the froth carrying between 70 to 80 per cent. of the total mineral present in the charge. The gangue slimes and the coarse sands are left quite white in the liquor below the froth, and the balance of the coarse mineral not caught up in the black froth, but remaining fixed with the sands, is found to have been efficiently oiled and to be capable of complete recovery from the sands by table aeration" (Vol. 3. pp. 1113, 1114).

With the obvious correction noted in the bracket, this exactly sums up the newly discovered process as applied to Broken Hill ore with oleic acid as the oil.

Then follows a statement describing investigations which satisfied the inventors that the froth was due "to the air introduced by the Gabbett cone during agitation" (p. 1114), that the production of froth was to some extent dependent upon "the amount of mineral slimes present and the fineness of the grinding" (p. 1115).

The continuous plant shown in Fig. 1 of the drawings of the patent in suit was here first described (pp. 1117-1120) and was shown in a drawing made by Mr. Sulman and annexed to the report (p. 1302) and all the methods of supplemental treatment referred to in the patent are described (pp. 1121, 1122) except the superaeration method, a later modification of the invention. In this continuous plant the cones of the Gabbett mixers were "speeded at from 1000 to 1100 revolutions per minute" (p. 1117), this being a slightly higher speed than the 900 revolutions per minute used at the time of the birth of the invention in suit (Higgins' Report, March 2, 1905, Vol. 3, p. 1094; Higgins, Vol. 8, p. 4534, Q358). The language above quoted was also quoted in the decision of the Supreme Court (Opinion p. 5), and clearly shows that the Supreme Court accepted the evidence as presented, that from the discovery between March 3 and March 10, 1905, until the completion of the first continuous apparatus, reported in May, 1905, the then recognized importance of aeration had brought about an increase in agitation for the purpose of increasing the aeration. Indeed, the Cattermole process having been now revolutionized, and the aeration which did not aid the Cattermole process being a vital and essential factor of the new process, it was in the natural order of development that aeration should be increased after the invention in suit had been discovered, demonstrated and taken as the basis of all further development.

A copy of this report of May 3, 1905, and its drawing were immediately sent to Australia, as appears from the memorandum on the report "Copy sent to C. F. Court-

ney and Geo. A. Chapman 5/5/05—May 5, 1905" (Vol. 3, p. 1113), and a similar memorandum on the drawing (p. 1302). Mr. Chapman testifies to receiving in June, 1905, instructions from Mr. Courtney, to whom all of Mr. Ballot's letters had been addressed, to change the Australian plant to take advantage of the discovery, and to receiving a drawing which he particularly identifies as a copy of the drawing attached to the report of May 3, 1905 (Vol. 2, pp. 245, 246, Q23), and says:

> "Owing to the trouble which had been met with in working our previous method, as a practical man, I was very much gratified and relieved to know that we could substitute this more simple and ingenious process."

This marked the commencement of the commercial use of the invention in suit, which will be hereafter referred to under that heading.

It may be noted generally as to the reports in evidence, prepared merely for the records of the company, the only remarkable fact is that they contain as much information as is contained in them. Very many subjects are only touched upon in the reports. For example, in the Higgins report of March 2, 1905, it is stated that during experiments directed by Mr. Sulman to determine the rate of change of granulation with temperature, the influence of other conditions was sufficiently marked to suggest their improvement, and that these conditions have been carefully examined (Vol. 3, pp. 1091, 1092), but nothing identifiable by the reports alone further appears as to these other conditions. Mr. Higgins testifies as to these other conditions. (Vol. 4, pp. 1818, 1819, XQ143), which are evidently of no importance in this

controversy, although one of them, as to the relation of the size of the revolving cone to the size of the vessel in which it revolves, is referred to at the end of Mr. Higgins' report of March 16, 1905 (Vol. 3, pp. 1111, 1112).

Again, comparatively little appears as to the investigations of the Froment process and the process of patents Nos. 793,808 and 788,247, but this merely shows how relatively unimportant these useless flotation processes were. As Mr. Higgins says of his tests of the Froment apparatus in May or June, 1904:

> "At that time a good many failures were only reported orally" (Vol. 4, p. 1809, Q99).

It is plainly apparent from the reports that up to the time of the discovery of the process of the patent in suit, the one reliable process of ore concentration of Minerals Separation, Ltd., was the Cattermole process, and that after the discovery of the process of the patent in suit the Cattermole process disappeared.

COMMERCIAL USE OF THE INVENTION—AUSTRALIA.

The commercial use of the invention of the patent in suit commenced immediately after that invention was made. The rapidity with which the process was put at work was truly remarkable. The invention was made between March 3 and March 10, 1905, and carefully and thoroughly investigated and tested, and the results of these investigations are fully stated in the Sulman and Picard Report of May 3, 1905, above referred to. This report went immediately to Australia, for Mr. Chapman

testifies that he received a copy of the drawing annexed to the report, which he identifies, and instructions relating to the process, in June, 1905 (Vol. 2, pp. 245, 246, Q23), and immediately went to work and altered the Cattermole 100-ton plant so as to carry on in it the process of the patent in suit (Q24).

The first large scale installation made in Australia, 12,000 miles from London, almost exactly reproduced the continuous apparatus which had been worked out in the London laboratory and completed in May, 1905. The invention was thus put to work on a large scale, treating the theretofore untreatable residues of former mining and ore concentrating operations which constituted the great tailings dumps at Broken Hill, Australia,

> "some ten to twelve million tons of mill residues, containing the major portion of the original zinc content" (Hoover, Vol. 4, p. 1783, XQ34).

The plant as described in the specification of the [redacted] patent in suit and in the Sulman and Picard report of May 3, 1905, and as constructed in Australia for the Cattermole process, contained a tail-end shaking table annex. This was soon abandoned. Mr. Chapman says:

> "The work on these tables was never really satisfactory, and an examination of the tailings showed the sulphide mineral losses to be in the form of a potential froth. A few experiments showed that it was only necessary to give these a slight agitation to bring about further air-bubble attachment, and this potential froth then became a real froth on passing it to another spitzbox. This second spitzbox was placed immediately below the first spitzbox, and the tailings were brought with a good splash on to suitable baffles and boards of the second spitzbox. From this date onward the tables for the

retreatment of tailings from flotation treatment were discarded'' (Vol. 2, pp. 247, 248).

The details of the improvement in the agitator wherein the revolving cone was replaced by revolving blades are described (pp. 248, 249, Q27), and the additional plants constructed are identified (p. 250, Q30), it being noted that they ''had a total capacity of over 10,000 tons per week'' (*idem*).

The details of these further plants are described (Qs32, 33), and it appears that all of these plants were operated successfully and profitably (p. 254, Q36). The apparatus as used in Australia when Mr. Chapman left there in May, 1908, was such as is generally shown in the drawing, Complainant's Exhibit Drawing, Australian Model Plant (Vol. 3, p. 1303), showing seven agitating compartments arranged in series and a number of spitzkasten also arranged in series, but with provision for the tailings of the first spitzkasten to drop with a splash upon an apron leading to the second, and so on, all as described by Mr. Higgins (Vol. 4, pp. 1815, 1816, Q136), who visited Australia in 1908 (p. 1814, Q128).

It is to be noted that it was in the development of the plants at Australia that the so-called ''beater'' form of agitator was adopted, by substitution of revolving blades for the smooth surfaced cones. As a matter of fact, however, these blades formed a vortex just as the cone had done, in consequence whereof air was drawn down from above the pulp and entered near the bottom of the pulp. Air was drawn rather than beaten into

the pulp, but after it had entered the pulp was beaten up into smaller bubbles. This was the form of agitator and aerator in use by both the plaintiffs and the defendant at the time of taking the testimony in the Hyde suit, and that fact accounts for the frequent reference in that suit to beating in the air to form the froth.

The testimony as to these various plants on the property of the Sulphide Corporation at Broken Hill, Australia, was brought down as nearly as possible to date in the Hyde suit by the deposition of A. W. Wincey, mill superintendent of this company (Vol. 2, p. 501, Q1), who left Broken Hill in the summer of 1912, and came to London and testified there (Q2). Mr. Wincey's work for the Sulphide Corporation commenced in June, 1906, while Mr. Chapman was there, and continued up to the time of his departure for London (p. 506, Q23). When he started at work three-quarters of a million tons of dumps, owned by his company, awaited treatment. These have all been changed into valuable concentrates by the process of the patent in suit (Qs24, 25). Mr. Wincey produces four photographs, taken the day before he left Broken Hill, of one of these flotation plants (Vol. 2, pp. 501, 502, Qs3-5) and these photographs are in evidence (Vol. 2, p. 502; printed Vol. 3, pp. 916, 917, 920, 921). Further improvements and the use of an essential oil have resulted in reduction in the quantities of oil, and the standard oily liquid in use when he left Australia was a mixture of "eucalyptus oil and oleic acid in the total proportion of .9 to 1.3 lbs." per long ton of ore (Vol. 2, pp. 505, 506, Q21), being .04% to .06%.

As to the magnitude of these operations, it is proved that the total tonnage of material treated at Broken Hill, Australia, according to the official returns made by licensees up to June 30, 1912, was about 2,250,000 long tons, and the total tonnage of zinc-lead-silver concentrates recovered more than 800,000 long tons (Vol. 3, p. 1014). As to the financial returns, the value of the concentrates recovered by the principal licensee, the Sulphide Corporation, in its individual operations whereby 445,299 long tons of concentrates were produced from 1,176,934 long tons of material treated, was £1,154,353 or more than $5,250,000, and the profit was £650,153 or more than $3,000,000 (p. 1016; Keating, Vol. 2, p. 491, Q5). Additionally at the plant of the Sulphide Corporation there were joint ventures of Minerals Separation, Limited, Lazard Brothers & Co. and the Sulphide Corporation wherein 636,799 long tons of material were treated and 216,181 long tons of concentrates were produced at a value of £635,371 or about $3,000,000, at a profit of £181,688 or about $885,000 (Vol. 3, p. 1011).

Another important operation in Broken Hill, Australia, was that of the Zinc Corporation which has extensively used, and is now extensively using, the process of the patent in suit under license from the plaintiff, Minerals Separation, Limited. This Corporation made returns, proved up to June 30, 1912, of 380,020 long tons of material treated and 132,675 long tons of concentrates obtained and additionally thereto a settlement on the basis of 12,000 tons of concentrates obtained (p. 1014). The exact values of these concentrates was not provable,

but computing them at the same value as that of the Sulphide Corporation operations covering substantially the same period, their value was about $1,800,000. This makes a total of more than 10,000,000 tons treated with profits in the neighborhood of $5,000,000 on returns up to June 30, 1912. The evidence as to the Australian use of the invention beyond this time was not available or indeed necessary to prove the immense value of the invention.

COMMERCIAL USE OF THE INVENTION—RUSSIA.

Mr. Chapman's next work of installation was at Orijarvi, Finland, Russia, and he went there in June, 1911 (Vol. 2, p. 276, Q84), and installed a plant which was operated in accordance with the process of the patent in suit, and the installation was highly successful and doubled the recovery of the valuable metals of previous water concentration plants (Qs84, 85). The oil used was a mixture of oleic acid and eucalyptus oil, oleic acid from .5 to two pounds per ton, eucalyptus oil .2 pounds per ton; and the sulphuric acid consumption was between sixteen and twenty pounds per ton (p. 281, Qs102, 103). The capacity of the plant was from fifty to seventy-five tons per day (Q107).

COMMERCIAL USE OF THE INVENTION—SWEDEN.

The next commercial installation made by Mr. Chapman was at the Saxbergets mine, Rafola, Sweden, and here he installed the process in a plant divided into two parts, one treating the crude ore and the other retreating

the concentrates (Vol. 2, p. 276, Q87). This doubled the capacity of the mine with the same quantity of crude ore as formerly treated (*idem*).

A very interesting feature of the work at this Saxbergets mine, was that the mixed concentrates of lead and zinc were fed directly from the flotation plant through magnetic separators, wherein the worthless magnetic pyrites or iron sulphides were removed, and were then passed over shaking tables to separate the mixed concentrates.

> "This series of retreatments were conducted on the concentrates without any special preparation. The small quantity of oil on these concentrates rendered this unnecessary" (p. 277, Q87).

This Swedish plant had a capacity of from one hundred to one hundred and fifty tons per day (p. 200, Q108). The oil used was wood tar oil in the proportion of four pounds per ton of ore treated, and sulphuric acid was used in the proportion of five or six pounds per ton (Qs104-106).

This installation was made during June and July, 1912 (Vol. 2, pp. 277, Q89), just before the taking of the testimony in London. When Mr. Chapman left the plant, late in July, 1912, the recoveries were over 90 per cent. zinc, and as he said when testifying, this good work was "being maintained" (Q87).

COMMERCIAL USE OF THE INVENTION—WALES.

Among the operations fully described in the London testimony in the Hyde suit there is one other installation,

not at a mine, but at a smelting works, which remains to be considered. This was at the Emu Works near Swansea, South Wales, Great Britain. This Welsh plant was installed not for the purpose of producing concentrates for sale, but for the purpose of testing on a fairly large scale a briquetting zinc smelting process (Ballot, Vol. 4, p. 1715, Q14), invented by Mr. Picard, one of the patentees of the patent in suit (Sulman, Vol. 4, p. 1664, XQ145; Morris, Vol. 2, p. 473, Q11). This plant treated something more than 200 tons of ore (Chapman, p. 273, Q76), and produced approximately 120 tons of concentrates (Morris, p. 473, Q9). The concentrates were put through the smelting process and the products of the smelting furnace were sold (p. 478, RDQ38). The ore treated had been brought from the San Francisco Del Oro Mine in Mexico (p. 473, Q6).

The peculiarity of this operation was that the ore treated contained such a very large percentage of calcite, about 5 per cent. (Chapman, p. 300, XQ179), and this calcite caused such a wasteful consumption of sulphuric acid, that the process as usable with this zinc-lead ore could not be successfully applied to the ordinary work of concentration at this mine. As Mr. Ballot testifies, a license was granted to the mine, but the process was not installed there because the result would not be commercial by reason of the cost of sulphuric acid (Vol. 4, pp. 1739, 1740, Q77).

The operations were carried on during the first three months of the year 1910 (Vol. 2, p. 269, Q262; p. 270, Q65). Heat and sulphuric acid were both used. When the sulphuric acid came in contact with the ore, however,

it promptly acted chemically on the calcite and was thereby consumed, and before the condition of acidification of the pulp could be attained and the physical action of the sulphuric acid utilized it was necessary to waste sulphuric acid in this useless chemical reaction. This chemical reaction produced the gas carbon dioxide, but this gas was a wholly useless diluent of the air with which the pulp was treated, and was, in fact, largely carried out of the pulp by the great volumes of air introduced in the operation.

The theoretical acid consumption in the treatment of this ore, that is to say, the amount of acid necessary to decompose the calcite in the ore, plus the additional amount necessary to produce acidification of the pulp, exceeded 100 pounds to the ton (Chapman, p. 280, Q100). In practice it was found that by dividing the acid addition up among four of the agitating compartments it was possible to economize this acid consumption (*idem*) so that it was actually reduced to from 60 to 70 pounds per ton (Q98). With this arrangement it was possible to produce a high grade concentrate at the expense of a reduction in recovery, but as the plant was never run for recovery, but only for the production of concentrates for use in the briquetting-smelting process, this arrangement whereby some part of the wasteful acid consumption was reduced, was not objectionable for that plant (Q101). Under these conditions the process of the patent in suit was carried on in a satisfactory manner and a good thick froth carrying a mixed concentrate of lead and zinc sulphide was produced (pp. 270, 271, Q67, Q71). The principal frothing

agent was oleic acid in the proportion of two pounds per ton, although it was mixed with the soluble frothing agent amyl acetate in the proportion of from .25 pounds per ton up to .5 pounds per ton, and for two days amyl acetate was used alone in the proportion of one pound per ton (pp. 279, 280, Qs96, 97).

As a matter of fact this operation gave a striking example of the wastefulness of the chemical reaction of sulphuric acid upon limestone, but the defendant seized upon it as the basis of an effort to prove the identity of the process of the patent in suit and the worthless Froment process, and in consequence there was a long cross-examination of Mr. Chapman as to the operations at the Emu plant which only accentuated the fact that the Froment reaction, which could not be avoided in the treatment of this ore with the addition of sulphuric acid, was wasteful and useless. This part of the cross-examination commences on page 297 (XQ164), and runs through very nearly to the end of the cross-examination. Briefly Mr. Chapman says that the sixty or seventy pounds of sulphuric acid per ton of ore was immediately consumed by the calcite in the agitating vessels (XQ164); that a considerable amount of carbon dioxide was generated and that the working temperature was 65° to 70° centigrade (149° to 158° Fahrenheit) (XQs169-173); that this gas was generated immediately like the explosion in the Froment test tube (XQ198); that the production of this gas never entered into the calculations of the metallurgists who were operating this plant, except as a factor compelling a large consumption of sulphuric acid, and that

the sulphuric acid was added in installments so as to give it a little chance to eat out the gangue before it was consumed, and that under the conditions of agitation and high temperature, the enormous volumes of air entering and leaving the pulp were quite sufficient to carry the carbon dioxide out of the pulp so that only a small proportion of the gas could reach the spitzkasten, and that as a matter of fact the production of carbon dioxide in each mixer per minute was only six-tenths of a cubic foot and this quantity was exceedingly small when compared with the enormous quantity of air entering and leaving the pulp (XQ199). Mr. Chapman further says that in his opinion no production of froth resulted from the evolution of carbon dioxide (XQ204); that the air had many hundred times the influence in froth production of carbon dioxide (XQ205); that he had only to look into one of the agitators to realize the enormous volumes of air entering and leaving the pulp compared with the comparatively small amount of carbon dioxide being evolved (XQ207), and that they were so sure that the froth was an air-produced froth that they did not give the matter of carbon dioxide production any serious consideration except that, as the first consideration was economy of reagents, they took every precaution to economize sulphuric acid (XQ212), and that although not intending to take advantage of the accidental presence of the relatively small amount of carbon dioxide, they could not prevent it (XQ213). Mr. Chapman also testifies that the wasteful consumption of sulphuric acid due to the presence of calcite has been one of the biggest difficulties encountered in his

work for the plaintiffs, and that he had spent nearly ten years in experimenting to overcome it (XQ214).

COMMERCIAL USE OF THE INVENTION—SOUTH AMERICA—BRADEN MINE.

The installation at the Braden mine in Chili, South America, was mentioned in the testimony taken in London in the Hyde suit. Mr. Chapman testifies to having carried out a large number of tests on the ore of this mine which determined that with the ore crushed to 80 mesh, ordinary atmospheric temperature conditions, an acid consumption of five to six pounds per ton and a consumption of frothing agents of three pounds of Texas fuel oil and one pound of American wood tar oil per ton of ore, recoveries would be 85 to 90 per cent. of the copper content of the ore in a concentrate assaying 10 to 15 per cent. of copper, the original ore content being roughly 3 per cent. of copper. He further said that the installation of a large plant for the treatment of 1,200 tons of ore per day was then taking place as a result of trials carried out in a smaller plant treating 250 tons per day (Vol. 2, p. 284, Q112). This testimony was given during the summer of 1912.

At the trial Mr. Chapman testified that he went to these mines in September of the following year, 1913 (Vol. 7, p. 4093, Q4); that he found installed there seven 600-ton standard Minerals Separation flotation machines (capacity 4,200 tons per day), not giving good results because of bad milling, and that he and Minerals

Separation's Chief Engineer, Mr. Walter Broadbridge, improved the recovery to above 80% total copper (Q5), including oxidized copper, and between 90% and 95% sulphide-copper (Qs6, 7). The capacity of this plant is about 1,500,000 tons of material treated per year.

It will be noted that the total amount of frothing agents here employed, 4 pounds to the long ton of ore, was .18% of the ore, and that a soluble constituent was present by reason of the use of wood tar oil (Higgins, Vol. 9, p. 4731, Q9), so that the actual amount of insoluble oil present was less than .18%. The amount of petroleum oil present was 3 pounds to the long ton of ore, or .13%. In the presence of the soluble frothing agent this minute amount of petroleum apparently performed a useful function. This is an example of the conjoint use in minute amounts of a frothing oil, a soluble frothing agent and a non-frothing oil.

COMMERCIAL USE OF THE INVENTION—CUBA.

The plant of the Cuba Copper Company was referred to in the London testimony. Mr. Howard, works manager of the London plant of the complainant, testified that he had assisted in the planning of this plant (Vol. 2, p. 344, Q41), and Mr. Ballot testified that one of the engineers of the company was then engaged in the erection of that plant in Cuba (Vol. 4, p. 1742, Q86).

At the trial Mr. Chapman testified that, returning from the Braden mines, he visited these mines at El Cobre, near Santiago, Cuba (Vol. 7, p. 4094, Qs5, 8),

and found installed and operating there a 600-ton standard Minerals Separation flotation machine which he improved to recover 80% of the total copper, with expectations of increase to 85% (Q8). The capacity of this plant is more than 200,000 tons per year of material treated.

COMMERCIAL USE OF THE INVENTION—CANADA.

While the record contains no specific identification of the Canadian licensees in the full list of licensees in the United States, Canada, Mexico, Cuba and South America (Ballot, Vol. 7, pp. 4026-4028, Qs1, 2), evidence was given at the trial of the excellent results obtained in the use of the process in suit by one of these Canadian licensees, Britannia Mining & Smelting Company (now the Howe Sound Company). Mr. Ira L. Greninger, a mining engineer, formerly employed by Minerals Separation American Syndicate (1913) Ltd. (Vol. 7, p. 4043, Q6), and then acting mine superintendent of Inspiration Consolidated Copper Company at Miami, Arizona (Qs2, 3), testifies to an installation made at this mine in June, 1912, of a 50-ton Minerals Separation standard machine (Qs9, 10, 13), for treating the chalcopyrite copper ore, containing about 4½% to 5% of copper (Qs11, 12) and employing as the frothing agent wood tar oil mixed with mineral oils (Q14), without acid and without heat (Qs15, 16), in the proportion of about 2 lbs. of oil per ton of ore treated (Q17), with recoveries from 88 to 97% (Q18) and a concentrate containing 20% of copper (Q19). He also testifies to visiting this plant in July 1913 (Q20), and

finding installed there a 600-ton standard Minerals Separation machine (Q22) using the same frothing agents (Q23) with improved recoveries (Q24). He found also that the mill which originally consisted of coarse jigs, fine jigs, tables and vanners, preceded by hand sorting, had been reorganized, with elimination of everything except the fine jigs, the tailings of which were reground and treated in the flotation plant (Q26).

COMMERCIAL USE OF THE INVENTION—MEXICO.

It is in evidence that a license was granted to the San Francisco Del Oro Mine prior to the summer of 1912 but that because of the large amount of sulphuric acid necessary for the treatment of the ore of that mine the process was not installed at the mine (Ballot, Vol. 4, pp. 1739, 1740, Q77). It is also in evidence that some 200 tons of the ore of this mine was treated in Wales, but merely for the purpose of making a test of the Picard zinc bricquetting process (see heading Commercial Use of the Invention—Wales). It is also in evidence that other licenses were granted, for example, to the Cusi Mining Company (Vol. 7, p. 4028), and the wholesale murder of mining engineers at this mine is a matter of general public knowledge. Conditions in Mexico were not favorable for the development of mining properties at and before the trial of this case.

COMMERCIAL USE OF THE INVENTION—UNITED STATES—LICENSEES.

The following is a full list of the licensees in the United States at the time of the trial (Vol. 7, p. 4028, Q2):

Anaconda Copper Mining Company,
Arizona Copper Company of Arizona,
Arizona Copper Company, Ltd.,
Atlas Mining & Milling Company,
Atwater, M. W.,
Broadwater Mills Company,
Butte Central Mining & Milling Company,
Cananea Consolidated Copper Company,
Ceylon Company,
Chichagoff Mining Company,
Colusa Parrot Mining & Smelting Company,
Consolidated Arizona Smelting Company,
Desloge Consolidated Lead Company,
Doe Run Lead Company,
Ducktown Sulphur, Copper and Iron Company,
Dutch Sweeney Mining Company,
Elm Orlu Mining Company,
Ely Associates and Brockman & Co.,
Engels Copper Mining Company,
Flint Mines, Ltd.,
Goldfield Consolidated Mines Co.,
Highland Valley Mining & Development Company,
Inspiration Consolidated Copper Company,
McDonald & Noble,
Mineral Recovery Company,
Mountain Copper Company, Ltd.,

Napoleon Mining Company,
Old Dominion Mining & Smelting Company,
Phelps, Dodge & Co.,
Pingrey Mines,
Portland Gold Mining Company,
Reward Gold Mining Company,
St. Joseph Lead Company,
Stoddart Milling Company,
Utah Leasing Company,
Vindicator Consolidated Gold Mining Company,
Weedon Mining Company.

The licenses were all produced and handed to appellant's counsel for examination (Vol. 7, pp. 4026, 4027; Vol. 8, p. 4726) and they made an abstract of such parts as they wished in evidence and this abstract was put in evidence (Vol. 8, p. 4726) as Plaintiffs' Exhibit 291 (printed Vol. 9, pp. 5489-5517).

A full statement of payments of royalty by licensees in the United States (Vol. 9, p. 5334) shows a total payment of $1,155,258.24 on operations involving the treatment of 12,953,038 tons of material by eleven of the licensees and the recovery of 227,070 tons of concentrates by eleven others of the licensees. Neither the total tonnage of material treated nor the total tonnage of concentrates recovered appears in this statement, by reason of the variant method of returns. So far as available evidence was given of the processes employed by these licensees, and it appeared that the process of the patent in suit was carried on by every licensee of whose operations evidence was available. The inclusion of all patents owned by the appellees

in the licenses, even the earlier patents for the Cattermole and other processes which were either never used in practice or (as to Cattermole only) the use of which was abandoned when the invention in suit came into use, and the inclusion of the soluble frothing agents patent No. 962,678 and all patents for improvements in process and apparatus which have followed the invention in suit, is appropriate in such licenses, but the basic and fundamental patent dominating all operations is the patent in suit. Where soluble frothing agents have been used, they have been used by every licensee, largely if not wholly in association with the insoluble mineral-froth-producing oils of the process in suit. The royalties are paid, primarily, for the use of the process in suit, and the fact that the patent in suit has formed the basis for a great number of improvement patents merely accentuates its importance as a dominating and master patent for a process which started a new art, the art of air-froth flotation.

Anaconda Copper Mining Company. The facts are fully set out by Mr. Albert Edward Wiggin, flotation superintendent for the State of Montana of the Anaconda Copper Mining Company. The Anaconda Copper Mining Company employed the ordinary water concentration process from 1902, in the Washoe Reduction Works, including, from 1912 to 1915, an improved system of water concentration known as the round table plant, developed by Mr. Wheeler and Mr. Wiggin (Vol. 8, pp. 4278, 4279, Q5, and pp. 4318, 4319, RQ119-127), and in 1914, a novel leaching plant. Early in 1914 it was decided to investigate on a fairly large scale the

treatment of slime and mill tailings by flotation. The details of this investigation are set out (pp. 4279-4289, Q6). Care and thoroughness characterized it. As a result it was decided to take a license from Minerals Separation and to remodel the plant for flotation and to scrap the round table plant and to divert the leaching plant to the retreatment of the sands dump. Altogether a going plant of the value of $859,098.23 was dismantled and scrapped (pp. 4298, 4299, Qs24-26). The remodeling of the concentrator plant was begun in January, 1915, and proceeded, one section at a time, and was completed, the last of the eight sections, about the middle of January, 1916 (p. 4279, Q5).

A full description of the remodeled copper plant is given at p. 4289 to 4293, Q7-13, in connection with flow sheets (Vol. 9, pp. 5342-5346). It consists of eight sections of 2,000 tons a day capacity each. In addition there is a slime flotation plant having a capacity of about 3,000 tons a day, the feed to which is 2,000 tons of current mill tailings and 1,000 tons of the dump or pond slime. This latter is an accumulation of rejected slimes from prior water concentration processes, estimated on January 1, 1916, as 833,758 tons, containing 36,031,725 pounds of copper (p. 4305, Q59 and 60, and p. 4292, Q11).

In the copper concentrator there is used for the copper sand, 3 to 3½ pounds of frothing agent (kerosene acid sludge) and from 6 to 8 pounds of sulphuric acid, per ton of ore fed to flotation (pp. 4290, 4291, Qs7 and 8); and for the copper slimes 5½ to 6½ pounds of frothing agent (3 to 3½ pounds of kerosene acid sludge and

2½ to 3 pounds of wood creosote) and about 15 pounds of sulphuric acid (p. 4292, Q9, p. 4300, Qs32, 33, and Plaintiffs' Exhibits 313-315, Vol. 9, 5555, 5556).

The zinc concentrator plant is described at pp. 4293-4296, Qs15-18, in connection with flow sheet, Plaintiffs' Exhibit 244 (Vol. 9, p. 5346). This zinc concentrator was designed to treat 2,000 tons of ore per day.

In the zinc concentrator there is used 2¼ to 3½ pounds of oil (kerosene sludge acid .7 pounds and wood creosote 2.7 pounds) and 22 to 27 pounds of sulphuric acid, per ton of ore fed to flotation (p. 4295, Q18, and p. 4300, Q32, and Plaintiffs' Exhibits 313-315, Vol. 9, pp. 5555, 5556).

To show the extent of use of flotation at the Anaconda mill, the figures for the year 1916 are given by Mr. Wiggin at p. 4300, Q34; p. 4303, Q47. The total feed to flotation from newly mined ore during 1916 in the copper concentrator was 3,800,750 tons of ore, having a copper content of 106,339,156 pounds. The tonnage of concentrate recovered by this flotation plant during 1916 was 576,417, containing 99,962,700 pounds of copper. The percentage of recovery by this flotation was 94% of the copper contained in the feed to flotation plant (Qs37-40). The grade was about 8.07% copper (Qs51-55).

The total tonnage treated by the zinc concentrator from the time the small concentrator started in January up to April 1st, 1917, was 292,493, containing 78,308,337 pounds of zinc. The recovery was 92.8%. The grade was approximately 33% zinc, a low grade by

reason of the large iron sulphide content of the ore (Vol. 7, pp. 4121-4123, RQs156-166), but adapted to a novel electrolytic precipitation process carried on in Great Falls (p. 4302, Qs41-47).

To indicate what would have been the value of the flotation process to the Anaconda Company in the years gone by, when water concentration was employed and when the reject of that water concentration ran to waste in the valley, Mr. Wiggin makes an estimate as follows. He gives us the total tonnage of ore treated from the time the Washoe Reduction Works started in February, 1902, down to the 31st of December, 1915, as 35,877,044 tons of ore containing, 2,408,629,436 pounds of copper (p. 4304, Q56). Of this the recovery of copper that was actually achieved by the processes actually used was 1,885,859,368 pounds. During that interval sand tailings had run to waste, the impounded remnant of which was estimated on December 31st, 1915, at 17,000,000 tons, containing .65% copper, or a total of 221,000,000 pounds of copper. In addition, slime from the mill prior to the use of the round table plant installation ran to waste, the impounded remnant of which was estimated on January 1st, 1916, at 833,758 tons, containing 36,031,725 pounds of copper (p. 4305, Q59). Mr. Wiggin, assuming that, through the years from February, 1902, to December 31, 1915, on the entire tonnage that was actually treated at the mill by water concentration from year to year, the flotation process had been used, as it was used during the year 1916, and had given the results it did give in 1916, figures that the additional recovery of copper from that tonnage would have been 353,-

010,773 pounds, and assuming the value of that copper at the average market price for copper current during that term of years (figured with reference to the tonnage treated at the mill from year to year) less a reasonable charge for the cost of treatment, he shows that that value would have been $38,125,163 (pp. 4305-4308, Qs61-64). The Anaconda Company did not earn that sum of money because it did not have the flotation process to use from 1902 to 1915.

To show the value to the Company as an asset on January 1st, 1916, of the 2.16% of copper in the 833,758 tons remnant in the slime ponds on that day (a total loss under prior processes but an asset now because of the advent and adaptability of the flotation process as practiced in the slimes plant of the mill to-day) Mr. Wiggin figures that value, on a reasonable assumption as to the price of copper and after making liberal allowance for the cost of treatment and smelting and converting, as $4,032,000 (p. 4308, Qs65-68).

It appears that the Anaconda Co. has a 2500 ton leaching plant that is being used to treat by leaching the 17,000,000 ton sand tailings dump, the reject of former water concentration processes (p. 4313, Qs87-93, and p. 4318, RQs114-118). This leaching process and the idea of building this leaching plant all came before flotation was tested (RQ116). The leaching plant was originally built to treat the sand tailings produced in the mill, the current tailings from the tables (RQ115). When flotation was tested, it was substituted as the process and the plant for treating the current mill tailings, and this

then almost new and costly leaching plant was diverted to another and inferior use (RQs117, 118).

It appears also that the advent of flotation in the Anaconda mill destroyed the reasonable hopes of the witness Wiggin and his co-inventor, based upon their round table invention, which was the best slime concentrator of the water concentration class, and, as such, seemed to have a future (RQs119-127).

Mr. Chapman, who had charge of the experimental work of this installation as the representative of plaintiff Minerals Separation, Ltd., also testifies in general corroboration of the facts fully related by Mr. Wiggin (Vol. 7, pp. 4101-4106, Qs47-66).

Elm Orlu Mining Company and Colusa Parrot Mining Company—Timber Butte Mill.—The facts in this regard are testified to by Mr. William Nicholas Rossberg, superintendent of the Timber Butte Mill (Vol. 8, pp. 4362-4387).

The Elm Orlu Mining Co. and the Colusa Parrot Mining Co. are licensees under the patent in suit and the results of the process as employed at the Timber Butte Mill are of special interest because the Elm Orlu zinc ore is so nearly identical with the defendant's Black Rock Mine ore.

At the Timber Butte mill there is both a zinc concentrator treating this Elm Orlu zinc ore, and a copper concentrator treating the reject or dump of the old reduction works of the Colusa Parrot reduction plant.

Mr. Rossberg gives a description of the zinc concentrator at p. 4363, Q6, to p. 4371, Q33, in connection

with flow sheet, Plaintiff's Exhibit No. 246. This zinc concentrator was completed and put in operation in June, 1914, and has remained in operation ever since (p. 4371, Qs34-36). The oil and acid consumption are set out at pages 4371 to 4375, Q37-Q58, and Plaintiff's Exhibits 247 and 248 (Vol. 9, pp. 5353-5354). The average for 1914 was .66 pounds of oil per ton of flotation feed and 10.7 pounds of acid; for 1915, 1.05 pounds of oil and 9.94 pounds of acid; for 1916, .70 pounds of oil and 10.19 pounds of acid.

The extent of use of the process in the zinc concentrator is set out at pages 4375-4379, Qs59-80, and in Plaintiff's Exhibit No. 249. The total ore tonnage treated in the zinc section up to the end of March, 1917, was 470,980 tons.

Plaintiff's Exhibit No. 249 (Vol. 9, p. 5355), produced and explained by Mr. Rossberg, shows the grade of flotation concentrate produced in this zinc section of the Timber Butte Mill as averaging, during January, February and March, 1917, 54.474 per cent. in zinc content, and the recovery by flotation expressed in percentage of zinc as 97.72 per cent. (figured as the ratio of zinc in the concentrate to zinc in the flotation feed), and the tailings that ran to waste as containing .714 per cent. of zinc.

The copper section of the Timber Butte mill is described by Mr. Rossberg at pages 4379-4381, Q81-Q84, in connection with the flow sheet, Plaintiff's Exhibit 250 (Vol. 9, p. 5356). It began operations in May, 1916, and has been in continuous operation ever since (p. 4381, Qs85, 86).

The total tonnage treated up through March, 1917, was 89,453 dry tons from the Colusa Parrot dump (p. 4381, Q87). The average amount of oil used during 1916 was 2.83 pounds per ton of flotation feed, and during the first three months of 1917, 2.28 pounds per ton (p. 2358, Qs88, 89). The acid used in 1916 averaged 9.38 pounds per ton, and for the three months of 1917, 5.87 pounds per ton (Q90).

The Colusa Parrot dump, which the copper section of the Timber Butte mine is treating, is a reject of former water concentration processes and contains approximately 900,000 tons, showing an average of 1.05% copper, which at the market price of 25 cents per pound for copper, represents a present net value, in view of the adaptability of flotation to treat it, of $1,800,000 (pp. 4382, 4383, Qs95-102).

Mr. Chapman also testifies as to this installation (Vol. 7, pp. 4100, 4101, Qs42-45).

Maxwell W. Atwater.—Mr. Atwater is a licensee of the appellees, living in Basin, Montana, and applied the process in suit first to the Basin dump of the Butte & Superior Mining Co. (appellant) at that place, and later to a copper tailings dump at the same place. His testimony describing this work is found in Vol. 7, pp. 4126-4135.

The Basin dump of the Butte & Superior Copper Co. consisted of a remnant of about 50,000 to 60,000 tons, as treated by Mr. Atwater (pp. 4128, 4129, Q14). It was the reject or tailings from the water concentration processes that had been employed there by the appellant

for two years ending about May, 1912, in the treatment of some 300,000 tons of ore (Q13). These tailings were reground by Mr. Atwater and concentrated by flotation in a standard Minerals Separation machine and a sub-aeration cleaner machine, beginning in June, 1914, and continuing until the dump was exhausted. The grade of concentrate averaged better than 54% zinc, sometimes reaching over 57% for months at a time (Q25). The recovery was 90% or a little better (Q26). At first about six pounds of oleic acid was used and two to four pounds of sulphuric acid. Later turpentine and pine oils were employed in place of oleic acid and only one or two pounds, either mixed together or separate, and as high as 15 pounds of acid (Q29). The profit over and above all expenses averaged about $45.00 per ton of concentrate (Q36).

To indicate the loss suffered by appellant prior to May, 1912, Mr. Atwater has made a calculation showing that if the entire 300,000 tons of ore which were treated at Basin by water concentration processes prior to May, 1912, had instead been treated by the flotation process as employed, and with results obtained by Mr. Atwater after June, 1914, the appellant would have made a profit of upwards of $1,000,000 more on that ore than it did make (Vol. 7, pp. 4135-4138, Qs58-63, and Vol. 8, pp. 4668, 4669, Qs1, 2, and Plaintiff's Exhibit 274, Vol. 9, pp. 5441, 5442).

The copper tailings dump at Basin under treatment by Mr. Atwater, known as the Heinze dump, contains 60,000 to 80,000 tons (p. 4159, RQ226), having a copper content of 1.25% (p. 4133, Q39). This is being sub-

jected to plaintiff's flotation process with acid and heat, and about 3 pounds of oil mixture to the ton of ore (Q45). The recovery is about 90% (Q50) and the grade of concentrate about 9% copper (Q51), which is profitable (Q55) and is in fact slightly higher than the standard of the Anaconda Copper Mining Company, 8.07%, and is a desirable and profitable grade for the Montana copper region (Wiggin, Vol. 8, pp. 4303, 4304, Qs53, 54).

The Inspiration Consolidated Copper Company.—The mine and mill of this company are located in Miami, Arizona. It is one of the great porphyry companies. The facts are set out by Mr. Greninger at Vol. 7, p. 4046, Q27 et seq. After a six months' test from January to June, 1913, on a small 50-ton standard Minerals Separation plant, a larger 600-ton plant was built, beginning January, 1914 (p. 4048, Qs42-47). Out of this grew the present installation, which was commenced in 1915 (p. 4076, XQ248). There are at present nineteen sections in use, and a twentieth section nearing completion (p. 4049, Qs50-52) having a total capacity of about 18,000 tons of ore a day (Qs53, 54) or about 6,500,000 tons per year. The oil used is about one and a half pounds of a mixture of crude tar oil and cresol (p. 4055, Qs87-89). The original ore contains 1.54% copper (Q85). The recovery of the copper that is in the form of sulphide is over 90 per cent. (p. 4071, XQ205). A shaking table treatment follows after flotation (p. 4055, Q82, p. 4070, XQs197, 198), but the amount recovered in that way is only 2 or 3 per cent. of the total recovery (p. 4089, RQ327).

The flotation machines of four mill sections are Callow cells; one section has a Minerals Separation machine of the Hebbard (sub-aeration) type; the other fourteen sections are special machines of the Inspiration type (p. 4049, Q50). In all of these machines compressed air is forced into the pulp at the bottom. Other details are set out in cross-examination (p. 4064, XQ151, to p. 4084, XQ293), and in further cross-examination and redirect examination (p. 4086, XQ305, to p. 4089, RQ328).

Mr. Chapman assisted in this installation, and briefly outlines his connection with the work in corroboration of Mr. Greninger (pp. 4096-4098, Qs13-23).

Consolidated Arizona Smelting Co.—Mr. Chapman testifies as to an inspection of this plant wherein a standard Minerals Separation machine was operating on copper ore, using between 2 and 3 pounds per ton of ore of a frothing agent consisting of a mixture of Carolina turpentine (an essential oil), fuel oil and stove oil, with recoveries in the neighborhood of 80%, which have been considerably increased, and on his last visit in 1916 were 93 or 94% (pp. 4098-4100, Qs24-40).

Old Dominion Mining & Smelting Co.—Mr. Greninger briefly described this installation as first made in 1913 (pp. 4089-4091, Qs. 329-335). Here the material treated was absolute waste before the process of the patent in suit was installed (Qs333, 334). In 1916 Mr. Chapman visited this plant (p.4106, Q67) and found it in operation using the largest amount of frothing agent in Mr. Chapman's experience, a little over 7 pounds of frothing agent per ton of ore (p. 4107, Qs71-73). This

company had not paid any royalty up to the time of the trial, although its operations have been carried on over a considerable period of time, but having contracted to do so by license agreement and having installed and used the process in suit over a period of years, it certainly has afforded evidence of the value of the process in suit, even if it had not paid its debts up to the time of the trial. The evidence shows that although this Company has endeavored to escape its contract obligations (Plaintiff's Exhibit 291, letter of June 18, 1914, Old Dominion Co. to Minerals Separation, Ltd., Vol. 9, p. 5508) it has not been released (letter of July 1, 1914, from Minerals Separation, Ltd., to Old Dominion Co., p. 5509). An abstract of the license (p. 5507) with these letters annexed, appears in Plaintiffs' Exhibit 291 (pp. 5489-5517).

Atlas Mining & Milling Co.—Mr. Greninger describes this installation, made in the fall of 1913 (Vol. 7, pp. 4058, 4059, Qs102-110). Here the ore was a lead-silver ore containing about 2% of lead and 10 to 14 ozs. of silver per ton of ore. Crude carbolic acid was the principal frothing agent, used in the proportion of from 1 to 1½ pounds per ton of ore. The recoveries were 90% of the lead and 80% to 85% of the silver, the concentrates containing 20% of the lead and 100 ozs. of silver per ton of concentrate. It may be noted that if the carbolic acid had been pure and used alone, it would have been pure phenol, a soluble frothing agent, but evidently in its crude form and used with other frothing agents it involved the presence of an oily frothing agent.

Dutch Sweeney Mining Co.—This is a gold mine, with an ore assaying between $3 and $4 per ton (Chapman, Vol. 7, p. 4123, RQ170), and concentrates obtained are valued at nearly $40 per ton (RQ172). They have a Minerals Separation sub-aeration machine (RQ169).

Other Licensees in the United States.—Mr. Chapman testifies to visiting the properties of the St. Joseph Lead Company, the Doe Run Lead Co., the Portland Gold Mining Co., the Vindicator Gold Mining Company, and the McDonald and Noble installation, at all of which flotation had been installed under the direction of the plaintiffs (Vol. 7, p. 4106, Q67).

COMMERCIAL USE OF THE INVENTION—UNITED STATES—INFRINGERS.

Chino Copper Co.—The facts as to the use of flotation by this Company at its plant in Hurley, New Mexico, are proved by the appellant. Mr. Wicks, Assistant Superintendent of the mills of this Company, describes the operations at length (Vol. 5, p. 2384 et seq.) and produces tabular statements said to set forth all of these operations. Defendant's Exhibit 29 (Vol. 9, p. 4990) is the final tabular statement of the plant treating vanner concentrates, and Defendant's Exhibit 125 (Vol. 9, p. 5141) is the final corrected tabular statement of the plant treating slime vanner tailings. The concentrates plant treated, from December, 1914, to March 31, 1917, a total of 223,775 tons of the finer low grade concentrates from water concentration, with an average recovery of about 94% and an average

increase in grade from 7.97% of copper to 29.62% of copper. The material treated was so fine that screen analysis did not show anything. 90% of it went through a 200 mesh screen (Vol. 5, p. 2430, Q71). The slimes plants treated 2,064,070 tons, with an average recovery of about 33% of the copper, and an average increase in grade from .804% copper to 25.35% copper. This material, the slimes reject of water concentration, was considerably finer than the vanner concentrates (p. 2442, Qs127-130) and evidently would be a waste product but for the process in suit. The low recovery was due to oxides and carbonates of copper which were not recovered by the process, and are ordinarily not recoverable by flotation (p. 2444, Qs136-141).

The slimes plant operated throughout this entire period with an average of 1.13 lbs. of oil per ton of ore or material treated, .056% of the ore. No change was made in this plant after the Supreme Court decision, and in the first quarter of 1917 the tonnage treated was 388,420, and the average oil per ton was 1.04 lbs., or .052%. A few experimental runs were made, however, with varying amounts of oil, at times more than a fraction of one per cent. of the ore, but these were of such small account that the average oil for the quarter was less than for the entire year 1916.

The smaller vanner concentrates plant with a yearly tonnage of only about 100,000 tons, as compared with a yearly tonnage of one and a quarter million tons of the slimes plant (see total tonnages of 1916 in Exhibits 29 and 125), was selected for demonstration of the possibility of operating a flotation plant with more oil than

a fraction of one per cent., and commencing December 21, 1916, the oil used averaged 23.38 pounds per ton of ore, 1.17% of the ore. The method of bringing this about was exceedingly simple. Before this change was made the oil used was a mixture containing 90% Barrett creosote (an impure material containing mineral-froth-producing oil and soluble frothing agent) and 10% Jones oil (a petroleum or fuel oil inert in the process in suit but useful in minute proportions with a soluble frothing agent). The mixture was changed to 10% Barrett creosote and 90% Jones oil (Vol. 5, pp. 2422, 2423, Qs41-44). From December 1 to 20, 1916, the oil mixture used averaged 12.39 pounds per ton, which contained 10% of inert oil. From December 21, 1917, to March 31, 1917, the oil mixture used averaged 23.38 pounds per ton and contained 90% of inert oil. The creosote in its impurities also included a fair amount of inert material and the net result undoubtedly was the use of about the same amount of mineral-froth-producing oil and soluble frothing agent at all times.

The fact that the material used at this mill which contains the mineral-froth-producing oil and the soluble frothing agent is a crude material containing a considerable proportion of impurities—a coal tar distillate from the well known roofing concern, the Barrett Company of Chicago (Wicks, Vol. 5, p. 2478, Qs288-291), would seem to account for occasional freakish operations at this mill, as for example the use on November 20, 1916, of 4500 lbs. of Barrett creosote (Vol. 6, p. 2940, Q27) in treating 179 tons of ore (Vol. 9, p. 5234), or 25.1 lbs. of creosote per ton of ore, when the average

total of all oils for the year 1916 was only 10.24 lbs. per ton and for the month of November, 1916, 13.71 lbs. per ton. But appellees' representatives were not present at any of the operations at this mill.

Janney Machines. The machines used were Janney machines, invented in 1913 and later (Janney, Vol. 5, pp. 2589, 2590, XQs217-224). These machines subject the pulp to a very violent agitation, much greater in degree than the standard machine of plaintiffs. Appellant's witness Conrads admits that this is "a terrific agitation" (Vol. 5, p. 2709, XQ387), and appellant's witness Wicks says that the pulp is so violently agitated that it is "almost a mist" in the agitating chamber (p. 2440, Q115). By reason of the excessive aeration resulting from this terrific agitation, this machine lends itself to masking the operations of the process in suit by moderate, and in emergencies immoderate, quantities of inert and useless oil. It is an interesting fact that this machine was invented by Mr. Thomas A. Janney, a capable metallurgist who has been active in the affairs of the Jackling group of mines (F. G. Janney, Vol. 8, pp. 4824, 4825, XQs49-52), including, with the appellant, the Chino Copper Company, the Ray Consolidated Copper Company, the Utah Copper Company and the Nevada Consolidated Copper Company (p. 4814, Q4), whose metallurgists have assisted the appellant, whose mills have been utilized for expensive tests and operations to aid the appellant, and all of whom are admittedly guilty of infringement of the patent in suit. This Janney machine is used by all of the infringers who assisted in the defense, as well as by the appellant.

The Janney machine is described by Mr. Wicks (Vol. 5, pp. 2437-2442) in connection with a very crude sketch, Defendant's Exhibit No. 27 (Vol. 9, p. 4988). The construction of the machine is much better shown in Mr. Janney's first issued patent No. 1,167,076, of January 4, 1916 (printed Vol. 9, pp. 4998-5004). Another patent to him, No. 1,201,053, issued October 10, 1916 (printed Vol. 9, pp. 5006-5014), shows his laboratory or test machine, which is in evidence, Defendant's Exhibit No. 185, and a drawing of which is in evidence, Defendant's Exhibit No. 183 (Vol. 9, p. 5226). Another and more recent type of this machine, referred to by the witnesses as the mechanical-air type, is substantially the same except that it contains in the spitzkasten a false bottom with an air cell covered by a porous medium so that aeration resulting from the terrific agitation is supplemented by subaeration, with its accompanying agitation, in the spitzkasten (pp. 2440, 2441, Qs121-124). Both types of machine are used by all of the mines of the Jackling group above referred to, including the appellant.

Utah Copper Company—Arthur Mill. The facts are stated by Mr. Thomas A. Janney, superintendent of the Mill (Vol. 5, p. 2542, et seq.) and the operations of one of the flotation plants at this mill, called the retreatment plant because it treats a low-grade vanner concentrate, are shown in Defendant's Exhibit 30 (Vol. 9, p. 4992). It appears that after about two years of experimental investigation, beginning in 1913, the Utah Copper Company, at its Arthur Mill, adopted flotation on a commercial scale, commencing in February, 1915,

and from that time up to December 21, 1916, it treated in this retreatment plant 420,285 tons of low-grade concentrate of an average of about 7% copper and obtained high-grade concentrates of an average of about 27% copper, using oil in a proportion averaging 3.76 lbs. per ton of ore or material treated, .19%. On December 21, 1916, this particular plant was changed over to use larger quantities of oil. For ten days to and including December 31, 1916, the amount of oil used was 23.95 lbs. per ton, 1.2%. In January, 1917, it dropped to 19.73 lbs. per ton, or .99%, and in February and March, 1917, it dropped to 15.39 and 15.33 lbs. per ton, respectively, an average of .77%. The regular operations reported stopped during March. From March 25 to April 8 experiments were carried on with the employment for the greater part of the time of an unusually large and wasteful amount of oil, and in a few experiments of an insufficient amount of oil, the average for these days being 39.13 lbs. per ton, or 1.96%. These experiments produced a very material impairment of the operations, and the great loss in the tailings is explained by a footnote as due to "extensive experimenting with oils." The average for the entire period from December 22 to April 8, was 18.81 lbs. per ton, or 94%, and the average of the regular operations very much lower. It thus became impossible in this selected plant at this mill to carry on the process of the patent in suit with one per cent. or more of oil, and coincidentally with the drop in January, 1917, to a fraction of one per cent. of oil, a method of calculation was hit upon for the purpose of increasing the figures alleged to represent the amount of oil used. Oil which

had already been used in the process and was returned with an unfinished concentrate or middling, was denominated as circulating oil and added to the oil actually used in the process, and the result was called "total oil," and this in January raised the average figure to 20.75 lbs. per ton, or 1.04%. In February, even this method of calculation failed to bring the figure up to 20 lbs. per ton or 1%, the actual figure being 18.30 lbs. per ton or .91%. In March the average of this so-called total oil was 20.26 lbs. or 1.01%. This method of calculation is considered under the heading "Infringement—Circulating Middlings."

There is also at this Arthur Mill a much larger flotation plant for the treatment of vanner slimes, the very fine reject of the water concentration of the mill. Mr. Janney describes this material as "very fine slime" (Vol. 5, p. 2571, Q129) 75% of which will pass through a 200 mesh screen (Q128), and it appears that it is of only about 1% copper content (Vol. 9, p. 5244). This plant is so large that to operate it at 20 lbs. of oil to the ton of ore would require 10,000 gallons of oil per day (p. 2578, Q171), whereas the retreatment plant requires under like conditions only 1500 gallons per day (Q174). The flow sheet of this plant was demanded and obtained (Vol. 8, p. 3844, Qs119, 120; Vol. 9, p. 5280) and is described (pp. 3844-3846). This flotation plant was being operated at the time of the trial without waste of oil, the oil used being in the proportion of 1.4 lbs. per ton of ore, .07%, and with recoveries of about 90% (Vol. 5, p. 2610, XQs332-336; p. 2572, Q133). The cost of wasting oil in operating this large plant was evidently prohibitive.

Thus we find that at this Arthur Mill the most strenuous efforts had failed to produce any regular operations in any of the flotation plants employing more oil than a fraction of one per cent. of the ore or material treated.

The experimental runs above referred to were carried on under such conditions that no one can tell just what relative proportions of soluble frothing agents were present, the one certain fact being that soluble frothing agents were always present. The experimental runs in the retreatment plant are reported in Defendant's Exhibit 31 (Vol. 9, pp. 4994, 4995). As to experiment No. 1 (run on March 30; Vol. 5, p. 2557, Q64) the amount of oil mixture fed was 1.60 pounds per ton of feed. But the pulp was fed from vast reservoirs to which had been returned the middlings of the run of the preceding day (Experiment 2, March 29; p. 2590, XQ225), during which 3.75 pounds per ton of oil mixture had been fed to the pulp; and the middlings came back with 41.4 pounds of an oil mixture, not analyzed, but only determined in bulk, per ton of circulating middings, as is determinable by simple calculation from the total circulating middlings and the total oil therein. Mr. Janney admits that the contents of the two reservoirs or Dorr tanks which receive both new feed and circulating middlings and from which all the pulp fed to the flotation plants, is "something enormous" and that as they "operate from day to day these tanks or these two tanks become contaminated or contained so much oil that is carried over from the day before" (Vol. 5, pp. 2620, 2621, XQ401).

The especial significance of these facts is as to the certain presence in the pulp of a large amount of soluble frothing agent. The oily mineral-frothing agent of the process in suit is attached to and goes with the metallic particles, wherever they go, mainly, of course, to the concentrate. The soluble frothing agent, on the other hand, stays in solution, as Mr. Higgins testifies, comparing the oily frothing agent of the process in suit, with the soluble frothing agent of patent 962,678.

> "That oil is found at the end of the operation on the concentrate chiefly. A very small portion may be found in the tailings, but the water is particularly free from it and [it] is no longer useful as a frothing agent. That makes a big contrast in the solution patent where the frothing agent remains in the solution and the solution can be used over again usefully" (Vol. 8, pp. 4602, 4603, Q403).

One of these experiments, No. 20, is put forward and described as having been made with petroleum oils exclusively (Janney, Vol. 5, pp. 2565, 2566, Q101-103). This experimental run was made on April 7 (p. 2591, XQ228-229). During the two preceding days, April 5 and 6 (Experiments 15, 16, 17; p. 2591, XQ225-227), the plant had been run exclusively with creosote and pine oil, both containing soluble frothing agents (as well as mineral-froth-producing oils). Obviously the pulp contained a large amount of soluble frothing agents which dominated the operation.

These experiments were not made in the presence of appellee's representatives. The only experiments made in behalf of appellant with petroleum in appellee's presence, were those made in court, and as to those it

was proved that the petroleum oils were contaminated with soluble frothing agents. When appellee visited appellant's plant, no attempt was made to show the effects of petroleum alone.

Utah Copper Company—Magna Mill. The facts as to the operations of one of the flotation plants at this mill, the retreatment plant, are set out by Mr. Conrads, metallurgical engineer at this mill (Vol. 5, p. 2629 et seq.) and figures up to and including December 24, 1916, are given in Defendant's Exhibit 35 (Vol. 9, p. 5015). It appears that the use of the process in suit began in this mill in September, 1914, and that in the period of two years and nearly four months covered by Exhibit 35, 568,163 tons of very fine low grade concentrates of water concentration were treated. The oil averaged 3.79 lbs. per ton of ore, or .19% of the ore. The concentrate was raised from the average grade of 8.35% copper to 21.01% of copper. The indicated recoveries averaged 97.46%. These operations were therefore highly satisfactory. On December 24, 1916, however, the amount of oil was increased (D. Ex. 36, Vol. 9, p. 5016), and during the remainder of that month averaged 15.93 lbs. per ton of ore, .8%. This failed of the goal of the effort, and during January the average was slightly increased to 18.41 lbs. per ton, or .92%, which still failed of the goal. During this month, however, the new method of calculation, which included oil already used with the oil added, by measuring the amount of oil in the circulating middling or unfinished concentrate, was adopted, and this brought the so-called total oil up to 22.01 lbs. per ton, 1.1%. In Feb-

ruary, 1917, the amount of oil actually used was diminished to 11.32 lbs. per ton, .57%, but by adding the already used oil in the circulating middlings, the so-called total was brought up to 23.21 lbs. per ton, 1.16%. In March careful watching produced the desired average of so-called total oil 20.62 lbs. per ton, 1.03%, although to accomplish this the new oil, or oil actually used, had to be increased to 14.88 pounds per ton, .74%. In April the seven days shown in the table were largely given over to experiments with consequent large losses in the tailings, and here the average of oil actually used was 14.81 lbs., .74%, and the so-called total oil only 16.08 lbs., .8%. The average of all of the oil wasting operations was 15 lbs. of oil to the ton, .75%. The operations exhibit a careful and futile effort to avoid using an amount of oil which does not exceed a fraction of one per cent. on the ore.

Tables of daily operations commencing December 25, 1916, were demanded and obtained, Defendant's Exhibits 39-43 (Vol. 9, pp. 5022, 5024, 5026, 5028, 5030), and these show that an oil mixture was used during December and early January containing 95% of Jones oil (a fuel petroleum inert in the process of the patent in suit) and 5% of pine oil (a combination of mineral-froth-producing oil and soluble frothing agent) followed by increase of the inert oil to 97% and diminution of the active frothing agents to 3%, and numerous struggles with oil mixtures, resulting finally in the latter part of March in a mixture containing 87½% of inert petroleums and 12½% of creosote, the latter containing mineral-froth-producing oil and soluble frothing agent and useless impurities.

At this Magna Mill there is also a slimes flotation plant, installed by Mr. Thomas A. Janney in the latter part of 1914 (Vol. 5, p. 2571, Q130). The amount of oil used in this plant during 1914 was in the neighborhood of from 1 to 5 lbs. per ton of ore (Qs131, 132). In April, 1916, it was found that by sulphonating the active frothing oils creosote and pine oil, excellent results could be obtained (p. 2572, Q133). Nothing further appears about this plant except the statement of Mr. Janney that if all the flotation plants at the Arthur and Magna Mills were changed over so as to use 20 lbs. of oil per ton of ore, it would require 87,500 gallons of oil per day (Vol. 5, pp. 2578, 2579, Q175). He also says that for the retreatment plants the particulars of the operations of which are given, it would require about 1500 gallons per day at each plant (Q174), and that for the slimes plant at the Arthur Mill it would require 10,000 gallons of oil per day (Q171). These figures leave an amount of 74,500 gallons of oil per day as required for operating the slimes plant at the Magna Mill for the oil-wasting conditions of the use of 20 lbs. of oil to the ton of ore. This slimes plant therefore is the greatest of all the flotation plants of the Utah Copper Company, and the expense of wasting oil in it being prohibitive, it was evidently not altered or experimented with in this direction. Indeed, it is quite obvious that it is not practicable to operate these great slimes flotation plants at these two mills with a waste of oil.

One other point of interest in these oil-wasting operations is very striking with the arrangement of flota-

tion machines used in the so-called retreatment plants at the mills of the Utah Copper Company, and is true to some extent as to all of the oil-wasting operations. This is the arrangement of flotation machines in series, so that each subsequent machine after the first machine operates upon a pulp mixture in which the proportion of oil to material treated is constantly diminishing. In the Magna Mill there are seventeen flotation machines in series, each subsequent machine receiving the tailings of the preceding machine (Flow Sheet, Plffs. Ex. 245, Vol. 9, p. 5347). The first machine produces a floating product in its spitzkasten which, in oil-wasting operations, contains an enormous proportion of oil, and this product, mixed with that of the other spitzkastens which produce finished concentrate, goes out of the system. Thus a great amount of oil is ejected from the system in the first operation of agitation and flotation, and each succeeding operation ejects oil. This was discovered by appellees' representatives at an exhibition of this particular flotation plant, during the trial, and is established by appellant's assays. Each successive machine down the line operates upon tailings containing a smaller proportion of oil than the material operated upon by the preceding machine, and the oil proportion is stepped down from machine to machine of the seventeen machines in series. This was admitted by Mr. Conrads at an early stage of the testimony (Vol. 5, pp. 2709-2714, XQs381-415), and later the machine was exhibited and the actual assays of the products, as proved by the defendant, showed that with the use of 21.32 lbs. of oil to the ton of ore, the overflow of the first spitzkasten contained 412.31 lbs. of oil per ton of prod-

uct, the overflow of the second spitzkasten 96.75 lbs. of oil per ton of product (Vol. 9, p. 5358), of the third spitzkasten 55.72 lbs. of oil per ton, of the fourth 28.72 lbs. of oil per ton, of the fifth 16.39 lbs. of oil per ton (p. 5359), and the combined sample of spitzkastens 1-10, 46.88 lbs. of oil per ton of product (p. 5361). The tailings fed from machine No. 11 to be operated upon in machine No. 12 contained only 6.60 lbs. of oil per ton of product, .33%, and the tailings fed from machine No. 11 to machine No. 12 contained only 5.75 lbs. of oil per ton of product, .29%. The original oil proportion of 21.32 lbs. of oil, or 1.08% must have been diminished to a fraction of one per cent. in the first machine, with its overflow containing 412.31 pounds of oil to the ton of product. The remaining sixteen machines were undoubtedly treating a product containing only a fraction of one per cent. of oil.

In the Arthur Mill retreatment plants there is this same arrangement of a great number of machines in series with the overflow of the earlier spitzkastens ejected from the system, the second machine treating the depleted product of the first, and so on (Flow Sheet, Vol. 9, p. 5278). One set of machines has 13 machines or cells in series and the other 15 machines or cells in series. Thus these retreatment plants were peculiarly well adapted for performing experiments with large amounts of oil initially used, but the excess speedily ejected from the systems.

An experimental run typical of other similar runs by defendant's allies, was carried on at this mill for the expressed purpose of demonstrating that better

results can be obtained with more than one per cent. of oil than with less than one per cent. of oil. This character of evidence is not now of any importance, since appellant admits that its operations with one per cent or more of oil are metallugically inferior and financially disastrous, and asks to be permitted to continue them for that reason. Nevertheless, in this instance the experiments will be considered. They are tabulated in defendant's exhibit 38 (Vol. 9, p. 5020).

An oil mixture which with variations of degree and not of kind, in three months' operations averaged 22.18 pounds to the ton of ore, was used in diminishing proportions down to 4.16 pounds per ton of ore, with diminishing recoveries, shown in the table as an increase in the amount of copper in the tailings. These losses are elaborated at various prices of copper.

The fact is that this oil mixture had to be present in about this proportion of 22.18 pounds to the ton of ore, in order that there should be present the necessary and critical amount of mineral-froth-producing oil and soluble frothing agent. The mixture used was 87½ per cent fuel oil (inert) and twelve and one-half per cent of creosote (containing mineral-froth-producing oil and soluble frothing agent). The 22.18 pounds of this mixture contained 2.77 pounds of creosote. When the proportion of the mixture was reduced to 4.16 pounds, the amount of creosote present was reduced to .52 pounds, only a little more than one-half a pound. The table of operations up to December 24, 1916, (Vol. 9, p. 5015) shows the former to be about the average used throughout this period of two years, allowing for the

very small amount of petroleums present. The reduction, therefore, in the amount of creosote, impaired the operation, and this would have been true whether the inert petroleum was present or absent. The elaborate calculation of losses is meaningless, and the table demonstrates nothing except the unreliable character of appellant's evidence.

Ray Consolidated Copper Co.—The facts are stated by Mr. Engelmann, flotation foreman of the Company, as a witness for appellant (Vol. 5, p. 2732 et seq., Vol. 6, p. 3234 et seq.) and the operations are shown in tabular statements, Defendant's Exhibit 150, Retreatment plant (Vol. 9, p. 5166) and Defendant's Exhibit 151, Tailings Plant (p. 5167). It appears from Exhibit 150 that flotation operations on the retreatment of vanner concentrates began during the fourth quarter of 1914, and continued up to the trial, during which time about 379,651 tons of material were treated, and that the oil employed was between 4 and 5 lbs. per ton in 1914 and 1915, between 3 and 4 lbs. per ton in 1916, and, in 1917, 20.02 lbs. per ton in January (1.001%), 18.77 lbs. per ton in February (.94%) and 21.19 lbs. per ton in March (1.06%) the average for the three months being 20.1 lbs. or 1.05%.

Here also, when, during January, 1917, the oil used hovered so close to one per cent. as to show that it would have to be dropped below one per cent., as occurred in February, the expedient of adding used oil to new oil was adopted, and in February this gave a figure of 1.07%, or 21.4 lbs. per ton, but strangely in March this expedient reduced the given total figure to

.97%, 19.4 lbs. per ton. The figures based on circulating middlings are, however, altogether deceptive and unworthy of consideration. It is noted that an expert oil chemist was employed to determine the amount of oil in the circulating load or circulating middlings, who spent something more than two months on the problem (p. 2744, Q54).

The same change in oil mixtures was made in this mill as in the other infringing mills, when changing to oil-wasting operations. Before 1917 the mixture contained 75% of creosote, with its useful frothing agents, and 25% of fuel oil, a petroleum, not a frothing agent, and useful only in minute proportions when the process of the soluble frothing agents patent No. 962,678 is carried on. Creosote contains a soluble frothing agent, and this minute proportion of fuel oil, less than a pound to the ton of ore, probably performed the only useful function that it can perform in flotation, of assisting in the stabilizing of the froth produced with a soluble frothing agent. When the change was made to larger oil proportions the mixture was changed to 10% of creosote and 90% of fuel oil (Vol. 6, p. 3244, Q37). Thus was added a wasteful, useless amount of an oil inert in the process in suit. From less than a pound it became about 9 lbs., while the creosote, which contained the mineral-froth-producing oil and which during 1916 was present in the proportion of about 2½ lbs. per ton (75% of 3.36) was now present in the proportion of about 2 lbs. (10% of 20). So far as the process in suit is concerned, the operation was substantially the same before January 1, 1917, as after

that date. So far as the process of the soluble frothing agents patent is concerned, the soluble frothing agent was present in about the same proportion before and after January 1, 1917, but the minute amount of inert and non-frothing oil which had helped it before January 1, 1917, was changed into an unconscionable and wasteful amount which impaired the process as a whole but did not destroy it.

The other flotation plant at this mill, that for treating the slime tailings, deals with a product which admittedly went to waste before flotation was installed (Engelmann, Vol. 6, p. 3269, Qs139-141). Its operations, commencing with the second quarter of 1915 and up to the end of 1916, are shown in Defendant's Exhibit No. 151 (Vol. 9, p. 5167). A total of 1,998,088 tons of this formerly waste product was treated in 1916 and the average amount of oil used was .85 lbs. per ton of ore, .04%. These operations have continued with the "usual amount of oil" (p. 3261, XQs87-88). This plant treats 7000 tons of material a day (p. 3235 Q8), and evidently the cost of wasting oil in it was prohibitive, whereas the retreatment plant only treats 350 tons per day (*idem*) and the waste and injury to operations was not so serious. All that the table shows of the operations of this great plant during 1917 are a few experiments with portions of the plant, as described in the footnote to the table. The earlier of these experiments were with straight coal tar, a mixed product which appears to possess the same character of constituents as the mixture of 90% of petroleum fuel oil and 10% of creosote which was used at other times in these

larger oil operations. It is interesting that the operations from February 8 to March 14 were obtained in the air machine (pneumatic or Callow type) annex of the mill, sketched in Defendant's Exhibit No. 149 (Vol. 9, p. 5165). On February 18, 1917, the amount of coal tar used was exactly 20 lbs. to the ton of ore (Vol. 6, p. 3268, XQ134) and on the other days of this run the oil at times went above 20 lbs., and at times below 20 pounds. (XQ135), the average of the run from February 8 to 28 being 20.1 lbs. of coal tar per ton of ore.

It may be noted as to all of these operations of the infringers who are assisting the appellant, in so far as they have been disclosed, that they demonstrate that with mixtures of mineral-froth-producing oils, of soluble frothing agents, and of inert oils, such as were invariably used, there is no one per cent. barrier.

Mr. Engelmann frankly admits that an effort was made to operate at his plants on straight fuel oil at various times.

> "but we could never maintain metallurgical results" (Vol. 6, p. 3255, Q78).

This is equally true as to all operations, although efforts were made by others of appellant's witnesses to mask their operations and hide the fact that a soluble frothing agent was always present whether dissolved in the pulp or water returned and stored from operations of preceding days or fed into the pulp during the experimental runs.

Nevada Consolidated Copper Co.—The operations of this member of the Jackling group of mines were not

put forward in this case by the appellant, but were extracted in cross-examination from Mr. Frank G. Janney (Vol. 8, pp. 4825, 4826, XQs53-59; p. 4827, XQs66-68). It appears that this company was infringing the process in suit in 1914, using from 2½ to 3 lbs. of oil per ton of ore, in Janney machines, and that it employed both soluble frothing agents and insoluble oily mineral-frothing agents.

Infringement—The Facts.

The procedure in defendant's mill covers three periods.

First, the procedure involved as the infringement in the Hyde case (August, 1911),

Secondly, the procedure from that date to January 7, 1917, and

Thirdly, the procedure from January 9, 1917, to April 15, 1917.

The first procedure has been held by the Supreme Court to be a clear infringement.

The second procedure is admitted by appellant's counsel here to be an infringement.

The third procedure raises the only issue of infringement that is made.

The facts as to these three procedures are briefly these:

1. In August, 1911, oil and acid and heat were used and vigorous agitation. The oil was oleic acid and 3.2

lbs. of it (.16%) per ton of ore was used; also about 1 lb. of sulphuric acid; and a moderate heat.

2. From August, 1911, to January 7, 1917, the procedure, with many variations, always included oil, and acid, and heat, and vigorous agitation.

The oil at first was oleic acid alone. Later it was usually a mixture of oleic acid and pine oil (June 1913 to about December, 1914). Through 1915 and 1916 it was usually pine oil alone.

The amount of oleic acid when used alone, or of the pine oil when used alone, or of the mixture when both were used, varied, but apparently was never above 4.24 lbs. per ton of ore (.21%). In July, 1913, 4.24 lbs. of a half and half mixture was used, i. e. .21% on the ore (Vol. 6, p. 3443, XQ. 443); in September, 1913, 2.799 lbs., i. e. .15% (Vol. 6, p. 3442, XQ. 440). In December, 1914, when pine oil was used alone it averaged for the month 1.64 lbs. per ton, i. e. .082% on the ore (Vol. 6, p. 3444, XQ. 450, 451). In 1915 it averaged 1.49 lbs. and in 1916 1.43 lbs., i. e. .07% on the ore (Vol. 9, p. 5184).

The acid varied considerably, being as high as 12 lbs. per ton in 1914. In 1915 it averaged 7.81 lbs. and in 1916, 5.25 lbs. The heating was maintained as before. The agitation was increased in vigor and violence with the introduction of the Janney machines, the use of which began early in 1915 (Vol. 6, pp. 3365, 3392, 3393, 3394).

A peculiarity in appellant's ore made the use of considerable quantities of sulphate of copper ap-

parently necessary to prevent defeat of the bubble formation by evolved sulphuretted hydrogen.

In 1916 the process of the patent in suit was used at greatest advantage. When the operations were thus most successful, pine oil was used alone, and in the smallest quantity ever used by appellant. Pine oil is itself a mixture, and contains both oil constituents and soluble constituents, and each character of constituent is separately an efficient frothing agent for the purpose of flotation, and both together are remarkably efficient. Thus the appellant, in using pine oil, was carrying on both the process of the patent in suit and the process of the 1910 patent No. 962,-678 (Vol. 8, p. 4737, Q. 37½; p. 4702, Q. 57, 58).

This procedure, conducted from August, 1911, to and through 1916, appellant admits to be an infringement.

3. Then the Supreme Court decision came down, and after mill tests on small tonnages from December 29, 1916, to January 8, 1917 (p. 5197), on mixtures consisting largely of kerosene, Jones' crude oil and creosotes, and in most of which pine oil was omitted (p. 5199), and where large quantities of the mixture were added, running up to 63.03 lbs. per ton of ore (3.16%), in one case, appellant made the following changes *in its regular mill procedure:*

(a) Appellant doubled the sulphuric acid. In 1916, 5.25 lbs. had been used per ton of ore. This was increased to about 20 lbs. for a week, and then reduced to 13 lbs. or 14 lbs. and finally to about 10 lbs.

(b) Appellant increased the pine oil. In 1916 1.43 lbs. had been used per ton of ore (.07%). In the 19 days of January, 1917, when used at all, 1.51 lbs. were used on the average per ton of ore (.075%); in February, 1.90 lbs. (.095%), and in March 2.82 lbs. (.141%). These figures are actual and are obtained by calculation from Vol. 9, pp. 5189, 5185, 5187, 5193 and 5195. For example, the oil mixture used on January 31, 1917, was No. 18 (p. 5187, last column). No. 18 was 10% pine oil (p. 5189). The total oil mixture added per ton of ore to flotation was on January 31, 1917, 12.63 lbs. (p. 5187). 10% of that is 1.263 lbs., which is .063% on the ore. So each day was calculated and the average taken.

(c) Appellant added kerosene or fuel oil or Jones crude oil or mixtures thereof, aggregating on the average 11.93 lbs. in January, 1917, 16.25 lbs. in February and 18.77 lbs. in March per ton of ore.

The figures given in (b) and (c) disregard the creosotes and other ingredients used, but these constituted approximately only 10% of the whole in January, 5% in February and 2% in March.*

*Appellant has made it difficult to reach these separate values given in (b) and (c) above by its method of stating in Exhibits 158, 159, 161 and 162 only one figure for the total oil mixture added, including under that term kerosene, Jones crude, No. 1 creosote, No. 2 creosote, Fuel, Pine, No. 4 Barrett, Tar and Paraffine base. The ingredients and percentages of each mixture for each day are given however in Exhibit 160 (Vol. 9, p. 5189) and these percentages have to be figured on the total "Pounds Added" of the other exhibits. The above figures were obtained in that way. The figures given by Dosenbach as "the best illustration of the procedure at the mill" (Vol. 6, p. 3344, Q. 136, 137), namely, 30 lbs. of total oil mixture (1.5% on the ore) of which 5.40 lbs. was pine oil (.27% on the ore) and 24.60 lbs. was petroleum products; also the total of 26 lbs. (1.3% on the ore) of oil mixture used in appellant's mill demonstration made for appellees on April 29, 1917, of which 6.24 lbs. was pine oil (.312% on the ore) and 19.76 lbs. was petroleum products (Vol. 8, p.

Do these changes achieve non-infringement?

1. *The Discontinuance of the Use of Oleic Acid in December, 1914.*

This can only affect the question of infringement of claims 5, 6 and 7, which call specifically for oleic acid. Those claims have not been infringed since that time.

2. *The Addition of an Extra Quantity of Sulphuric Acid to the Pulp, 10 Lbs. Per Ton of Ore Instead of 5.25 Lbs.*

The necessity for the doubling of the acid evidences a greater tendency of the gangue to be coated with oil, for according to the patent (p. 1, line 41) the effect of acidity is "to prevent gangue from being coated with oily substance, or, in other words, to render the selective action of the oil more marked." The increase in the quantity of acid, therefore, would seem to be calculated not to change the process but to preserve it from change.

4431); also the total of 42 lbs. (2.11% on the ore) of oil mixture used on May 5, 1917, in the Exhibit Model Pyramid machine of which 7.56 lbs. was pine oil (.378% on the ore) and 34.44 lbs. was petroleum products (Vol. 7, pp. 3900, 3902)—all of these figures are seen by the actual figures later given of the real mill operations (D. Exs. 158, 159, 161 and 162) to be altogether too high in both factors.

These latter Exhibits disclose almost daily and startling variations of ingredients and of percentages and of totals. Thus the total oil mixture added per ton of ore varied in January, 1917 (p. 5187) from 8.06 lbs. to 22.55 lbs. and averaged 14.75 lbs.; in February (p. 5193) from 10.77 lbs. to 24.86 lbs. and averaged 19.33 lbs.; in March (p. 5195) from 17.52 lbs. to 29.44 and averaged 22.08 lbs.; and in April 1-15 (p. 5185) averaged 23.91 lbs. This covers all of appellant's operations from January 9 to April 15, 1917, and shows that neither 42 lbs. nor 30 lbs. nor 26 lbs. were typical of the total mixture added in the real mill operations. Nor were 7.56 lbs., nor 6.24 lbs., nor 5.40 lbs. typical of the amount of pine oil used in the actual mill operations.

Appellant gave no data for April from which corresponding calculations could be made. The court below adopted the larger figures first given by defendant's witnesses, the ones most favorable to it, and still found infringement.

3. *The Addition of an Extra Quantity of Pine Oil—1.51 Lbs. Per Ton of Ore in January, 1917 (.075%), 1.90 Lbs. in February (.095%) and 2.82 Lbs. in March (.14%) Instead of the 1.43 Lbs. Used in 1916 (.07%).*

This larger amount is well within the narrowest prescription of the patent, even when its soluble constituent is unsubtracted and disregarded. It is undoubtedly "considerably reduced" (p. 1, line 29) as compared to Cattermole proportions, and is reduced "say to a fraction of one per cent. on the ore" (p. 1, line 30), and is but little away from the "0.1 per cent. of the ore" which is given as the recommended proportion in the case of oleic acid and Broken Hill ore (p. 1, line 99). It is well within the terms of all the claims even on the narrowest construction—"a fraction of one per cent. on the ore" of claims 1, 2, 3 and 12—"a small quantity" of claims 9, 10 and 11 as limited by disclaimer. When the soluble constituent (which is dissolved out of the pine oil at once by the water of the pulp) is considered and subtracted the oil residue left to effect the process in suit must be less in quantity than the small quantities given.

Does the slightly larger quantity of pine oil operate in the process since January 9, 1917, any differently than the smaller quantity did before that time? No testimony for appellant shows that it operates any differently and no testimony even tends in that direction. On the contrary the experts on both sides agree that the same operation proceeds and the same mineral-carrying froth concentrate is produced, and

appellant's witnesses give no different explanation of its formation, and there is none.

The fact that after experimental efforts to do without pine oil its use had to be resumed (pp. 5197, 5199 and 5187 and 5189) indicates the essential character of its function in the process.

The fact that, coincidently with the addition of the excess quantity of petroleum products the quantity of pine oil had to be increased indicates that the fulfilling of its function in the process was rendered harder by the presence of the petroleum products. The function of the oil of the patent being to modify the air bubble formation and the adherence of "such bubbles or air films" "to the mineral particles" and thereby to effectuate the peculiar mineral-carrying froth phenomenon and result (patent p. 1, line 89, p. 2, line 111, p. 3, line 27), the inference to be drawn from the necessity of increasing the quantity of pine oil is, that the petroleum products, as used, tend to hinder and prevent that function.

The increase in the quantity of pine oil, therefore, would seem to be calculated not to change the process but to preserve it from change.

4. *The Addition of Kerosene or of Jones Crude Oil or of Fuel Oil, or of Mixtures Thereof in an Average Aggregate in January, 1917, of 11.93 Lbs., in February of 16.25 Lbs., and in March of 18.77 Lbs. Per Ton of Ore.*

The testimony on the question whether this addition of petroleum products changes the character or

the substance of the operation or the kind or nature of the result or product is as follows:

The appellees' testimony shows by Mr. Greninger (accepting the mill procedure of April 29, 1917, as illustrative of the process) that the froth of appellant's 1917 process

> "was a mineral froth, I would say a typical froth of the patent in suit, with indications of a degree of over-oiling" (Vol. 8, p. 4326, Q. 14);

that the process is the process of the patent in suit (p. 4327, Q. 19, 20); that the result is the same (Q. 21) though inferior (Q. 22); that a large proportion of the oil of the mixture was an inactive oil and useless for flotation purposes when used alone (p. 4358, Q. 189-194; p. 4331, Q. 37-44); that much of it was absorbed by the clay slime of the gangue (Q. 32, 33).

Mr. Chapman testified on the same subject, beginning at Vol 8, p. 4430, Q. 2. He says that the process is the agitation froth process (Q. 37); that fuel oil, kerosene and stove oil are inactive in appellee's process (Q. 38-40), although in small quantities they help steady the froth overflow; he noted an unusually large proportion of clay gangue slime in the appellant's pulp (Q. 25), and says that this absorbs oil and renders it inactive for flotation purposes (p. 4433, Q. 27-29; p. 4450, XQ. 95, 96); he says that the agitation was greater than in appellees' standard practice (p. 4445, Q. 72).

Mr. Higgins testifies that the appellant's process as exemplified on April 29 was not the process of Everson, Kirby, Froment or the California Journal

(Vol. 8, p. 4739, Q. 43 et seq., p. 4782, RDQ. 249); that it was the process of the patent in suit (p. 4735, Q. 34-36), and that it was also the process of the soluble frothing agent patent (p. 4737, Q. 37, 38); that kerosene used alone is inert to flotation (p. 4740, Q. 49); and he demonstrated that fact by a court test employing 2 lbs. kerosene (.1%) per ton of ore (p. 4603, Q. 407-416). He then added 2 lbs. of pine oil per ton of ore (.1%) and repeated the agitation and a good mineral froth was produced (Q. 416-419). He testified that kerosene when used *in small quantities* with pine oil

> "stabilizes the froth and prevents what we call showering, that is, the dropping out of the coarser particles from the froth" (p. 4605, Q. 419-422);

and he also demonstrated that the fuel oil and kerosene components of defendant's mixture, aggregating 18 lbs. to the ton, would not produce a mineral froth, but that when 4 lbs. of pine oil was added and the agitation repeated a good mineral froth was produced (p. 4606, Q. 424-426; p. 4611, Q. 444-447; p. 4613, Q. 458-466).

Mr. Wiggin of the Anaconda Co. says some of the petroleum oils do not produce the result aimed at in flotation (Vol. 8, p. 4315, XQ. 99); that he never considered stove oil a flotation oil (Vol. 8, p. 4316, XQ. 106); that stove oil seems to make the froth a little more compact (Vol. 8, p. 4283); that aluminous clay material in the Anaconda copper slime probably absorbs some oil, rendering that much of the oil useless for flotation (Vol. 8, p. 4300, Q. 33).

Some of appellant's witnesses attempted to prove sporadic operations with kerosene or fuel oil, but they were thoroughly discredited. (See cross-examination of Janney, Vol. 5, p. 2612, XQs. 349-408, and p. 2627, RXQs. 432-446). Appellant's brief, p. 45, italicizes the words *kerosene* and *alone* in the phrase "*kerosene* acid sludge *alone*" as though the Anaconda Co. used kerosene alone for flotation sometimes. But kerosene acid sludge is a by-product from the manufacture of kerosene. It is not kerosene and contains no kerosene (Vol. 8, p. 4317, Qs. 110-112).

Appellant's witness, Mr. Engelmann of the Ray Consolidated Co. says of fuel oil like that which constitutes about 70% of appellant's mixture,

> "We tried at different times to run on straight fuel oil, but we could never maintain metallurgical results" (Vol. 6, p. 3255, Q. 78).

Professor Bancroft, testifying for appellant, repeatedly says that kerosene is a non-frothing oil, and selects it as the typical non-frothing oil (Vol. 6, p. 3145, Q. 24; p. 3153, Q. 50; p. 3154, Q. 51) and refers to the Appellant's mixture used on April 29 as containing (1) the non-frothing viscous oil, fuel oil, (2) kerosene, which he had selected as the typical non-frothing oil, and (3) pine oil, a frothing oil (Vol. 6, p. 3149, Q. 40, 41).

Dr. Sadtler, for appellant, says that in his experience some kerosenes cannot be made to raise a froth, while other kerosenes do, but he cannot say why (Vol. 8, p. 4790, Q. 6).

Professor Taggart, testifying for appellant, said that the oil that is not taken up by the bubble surfaces but on the contrary floats as oil, is

"lost to the process" (Vol. 6, p. 3024, Q. 248);

also that the oil that comes to the surface as oil and flows over with the concentrate is wasted (ib.). Appellees' witnesses had spoken of the appearance of oil floating as oil in the froth concentrate on April 29.

Professor Beach, testifying for appellant, says that there is no difference in the function when the oil is over one per cent. and when it is under one per cent. (Vol. 6, p. 3068, Q. 55) and that the process is the same in kind whether oil above one per cent. or oil under one per cent. is used (p. 3122, XQ. 228, 229).

Appellees' witnesses had spoken of the large absorption of the fuel oil and kerosene in the clay gangue slime of the ore. The reports of appellant's mill superintendent (Defendant's Exhibit 227, Vol. 9, pp. 5292-5301) show that of every 26.37 lbs. of oil added on April 29, more than 10 lbs. ran to waste in the tailings.

That appellant's 1917 procedure is metallurgically and financially inferior to its former procedure is also clear on the record.

Mr. Wilding in Vol. 8, p. 4642, Q. 136 et seq. and in Plaintiff's Exhibit 272, Vol. 9, p. 5436 institutes a comparison between the last quarter of 1916 and the first quarter of 1917 based upon the appellant's own figures given in its monthly statements filed in court, these periods being chosen as the nearest together

in point of time and therefore the closest approximations to each other in the matter of mill development in process and machinery. The results briefly tabulated are as follows:

	1916.	1917.
Zinc recovery	92.94%	83.11%
Zinc in concentrate	53.25%	47.23%
Zinc in tailings	1.24%	2.79%
Zinc lost per ton of ore	19.11 lbs.	43.22 lbs.
Concentration cost per ton of ore	$0.82	$1.34

Thus the 1917 procedure as compared with that of 1916 lost more of the values in the tailings, failed to achieve as high a grade of concentrate for the smelter, and cost more in the mill. It cost more to achieve less.

Mr. Wilding made a further comparison of the separate months of 1917 with selected months of 1916 when the grade of ore ran about the same, and as a final conclusion of this comparison (p. 4660, Q. 256-258, and note on Plaintiff's Exhibit 273) said that the figures show that there was a decrease of profit in 1917 from the zinc alone of about $1.75 per ton on every ton of ore delivered to the flotation plant, and that the capacity of the mill was reduced, and that on a conservative estimate as to the market price of spelter, the decrease of profit on 580,000 tons, being about one year's capacity, would be upwards of $1,000,000.

Mr. Wilkinson (Vol. 8, pp. 4670 et seq. and Exhibit 275, Vol. 9, p. 5443), approaching the matter from a

slightly different angle compared the appellant's figures for its flotation of zinc ore during the first quarter of 1917 as given in its sworn monthly reports, with the Timber-Butte mill figures for the same quarter for its flotation of the similar Elm Orlu ore as given in Plaintiff's Exhibit 249 (Vol. 9, p. 5355), Timber Butte Mill being that of one of appellees' licensees. The result was as follows:

	Timber-Butte Mill	Appellant's Mill
Zinc recovery	97.72%	83.11%
Zinc in concentrate	55.47%	47.23%
Zinc in tailings	0.44%	2.79%

Mr. Wilkinson gives it as his opinion that the result obtained at the Timber-Butte mill as given is considerably better, indeed notably better, than the result obtained at the appellant's mill (p. 4679, Qs 43-48).

The comment of the court below on this testimony was Vol. 1, p. cxci):

> "Defendant not very insistently claims results for this latter period are more profitable than for the former. But plaintiffs' analysis, neither denied nor criticized, and beyond both, of defendant's reports and tabulations, makes manifest the fact is otherwise to the extent of about $1.75 per ton of ore—an enormous loss on 45,000 tons monthly. There is considerable like testimony in reference to operations by other infringers."

Summing up all the testimony as to appellant's 1917 procedure, the facts stated and the opinions given of practical experts in this art and the calculations based on appellant's own reports stand uncontradicted, and furnish full basis and justification for the findings of the lower court in this regard.

It is a patent fact that it was no metallurgical necessity or advantage that prompted appellant's increase in the amount of oil since January 9, 1917. It is a patent fact that it was the Supreme Court decision upholding the patent as valid that prompted, and alone explains, that metallurgically absurd and financially ridiculous action. It is a patent fact that appellant by that action sought to just squeeze over the line that it thought marked the boundary of the appellees' monopoly —to just squeeze over the line and no more, so as to retain as much of the substance and advantage as possible, and yet appear to be outside the terms of the claims—to stay so near as to keep the substance while seeming to avoid the letter. It is a patent fact that appellant's action was "obviously intended to avoid the wording of the claims" *(Hoyt v. Horne,* 145 U. S. 302); that it was "not to bring about a product essentially different from the patented product, but to introduce a process so colorably different that it might be used as a shelter against the charge of infringement" *(National Co. v. Elkhart,* 123 Fed. 431)—*a situation that challenges the ingenuity of a court of equity to defeat it (and properly so) by considering the substance of things rather than the letter.*

The question of infringement by appellant's recent practice may be considered from the comprehensive point of view of the process as a whole, or it may be considered from the point of view of each step separately, that is to say, the action of each agitator cell and spitzkasten unit by itself. From either point of view infringement is equally manifest.

From the point of view of the general process, that part of the oil mixture which constitutes the greater part and which carries the total above twenty pounds, is inert and useless for the purposes of flotation; it is not certain that with the character of ore that appellant now treats, it even has a preferential affinity for the metal over gangue, since it seems to go indiscriminately to both; and under the conditions of its use it is prevented from assisting, and also largely prevented from defeating, the real process that is proceeding by the presence of a small fraction on one per cent. of active oil and by the presence also of a soluble frothing agent and by the terrific agitation employed. The general process is proceeding by reason of the presence of the small fraction of one per cent. of active oil, and in spite of the presence of the large fraction of one per cent. of inactive and useless oil. The oils of the mixture have been carefully selected for these respective purposes, and as the result, as Mr. Dosenbach says, of an accidental discovery made by him in 1913 that there were such inert oils that could be so used in excess quantity without defeating the main process (Vol. 6, p. 3397, XQ. 361, and he later experimented with thousands of oils, p. 3398, XQ. 370), and as the result, as Mr. Thomas Janney says, of a protracted experimental investigation carried on through two years or more (Vol. 5, p. 2543, Qs. 12-17), and perhaps the result also of the development and invention by Mr. Janney of a machine giving so violent and so often repeated an agitation, that the blighting and froth-destroying effect of the excess oil is to some extent neutralized and overcome. These young men after several years of investigation and effort, discov-

ered how to use appellees' process without, as they thought, appearing to do so. They admittedly get appellees' results. They really carry out appellees' process. *Their departure in the matter of the more violent agitation employed is not a departure toward the prior art, but away from the prior art.* And their use of an excess and useless quantity of inert oil is a mere pretense and a sham. Every element of every claim in issue is present in appellant's recent procedure, powdered ore, water, agitation, oil-coated mineral matter, the oil coating being obtained by the addition to the water of an oily liquid that has a preferential affinity for the metalliferous matter and that has besides a mineral-froth-forming power, and amounting to a fraction of one per cent. on the ore, an air-lift of the metal actually proceeding, and an air-froth actually holding the metal, that froth separated from the remainder of the pulp by air flotation, that is to say, by air-lift, and the so-separated froth being then removed. There is no real controversy as to these facts. The further addition of oily liquid that does not have a mineral-froth-forming power and that in fact does not form the mineral matter into a froth, and that does not contribute to the air-lift of the mineral or to the air-froth holding of the mineral after lifting, but that goes partly to the gangue and partly remains as unattached oil that merely floats uselessly as oil, is wholly immaterial seeing that it has no practical effect on the result either to achieve that result or to defeat it.

Considered from the more detailed point of view, that is to say, regarded as a series of processes, it is equally

clear that appellant's recent operations are an infringement.

Regarding each machine as effectuating a separate process, there are some sixty or seventy such processes in appellant's mill proceeding continuously, either side by side, or successively, as the case may be, according to the flow sheet. Everything that has been said above from the general point of view, applies to each and every machine considered separately, even to the first machine in each set. And in addition *each subsequent machine in each set after the first machine, operates upon a pulp mixture in which the proportion of oil to solid matter constantly diminishes,* and consequently, after the first machine, we have—as the mixture fed to each subsequent machine and agitated there and a mineral-carrying froth taken from it there—a mixture of oil, ore, water and acid, in which the total oil of all kinds is less than one per cent. of the dry weight of the solid matter of the ore fed to that machine at that time.

The tailings of the first cell or machine are the feed of the second and the tailings of the second are the feed of the third and so on down through the seven rougher cells of each pyramid or group. A continuous and in all essentials a complete process of concentration of ore goes in on each cell. But more oil in proportion to solids goes out in each case with the concentrate at the top than is left to go out with the tailings at the bottom. So the feed to the successive cells is impoverished in its percentage of oil to ore by successive steps. If the feed to the first cell has barely over one per cent. of oil the feed to the second cell is bound to be notably less and

under one per cent. and the impoverishment is progressive and inevitable and is notable in amount at each step and all of the operations after the first is bound to be a process conducted with less than one per cent. of oil (of every kind) to ore in its feed. By cell or machine we mean a complete Janney unit including the agitator part and the froth part or spitzkasten. There is no way in which appellant could employ a pyramid of machines, the tailings of one being the feed of the next, that would not by one or two steps so impoverish the feed in the matter of oil that the percentage of total oil to ore in such feed would drop far below one per cent.

Again in the fourth, fifth, sixth and seventh spitzkasten of the rougher machines air under pressure is introduced at the bottom, causing an additional ebullition of bubbles that sweep upward through the pulp, and "to the surface thereof, all the metalliferous matter in the form of a froth" (Patent in suit, p. 2, line 114). In all these rougher machines this additional aeration and the agitation that it achieves and the additional air-lift and air-froth that it produces, follow a mechanical agitation in a separate vessel just as described in the patent in suit, and are applied to the tailings that flow from the spitzkasten of earlier rougher cells, just exactly as it is applied in the patent in suit—a "method for the recovery of any sunk oiled metalliferous matter which may be deposited in the second and third spitzkasten" (Patent in suit, p. 2, line 103). This in itself would be an infringement if there were nothing more.

Again, as a further supplementary treatment for the recovery of any oiled metalliferous matter that may

have failed to rise in any of the series of rougher machines, and has consequently been discharged as a tailing from the bottom of the last spitzkasten, those tailings are submitted in a number of Callow cells to a final agitation effected by the introduction of air under pressure through cloth at the bottom of the cells, this again sweeping to the top in the form of a froth any oil-coated metalliferous particles that may have escaped air-lifting theretofore. The very excess and superabundance of air and of air-froth produced in this way, achieves something additional in the way of mineral recovery and so adds to the general effectiveness of the process. Considered with the preceding agitation that the pulp has received it constitutes what was held in the Miami case to be an infringement. Considered alone, it constitutes infringement, even if there were nothing more, and the bulk of the oil having gone with the concentrate, there must have been in this operation a condition paralleling that arising from the addition to the pulp of a small fraction of one per cent. of oil to solid matter, even counting all the inert and useless oil.

Infringement—The Law.

Inventions are things, not words. Infringement goes to substance, not to form. As the Supreme Court said in Union Paper Bag Co. v. Murphy, 97 U. S. 120:

> "attention should be given to the portion of the device 'that really does the work,' disregarding the parts that are merely used as conveniences,"

thus going through the mask to the reality beneath the mask.

The Supreme Court in the Hyde case has in effect prejudged the question of infringement in the case at bar by laying down the test or rule by which infringement is to be judged, given ore, oil, water, agitation and mineral froth production, namely, by "the results obtained," paralleling the rule "by the test of *beneficial results*" stated in *United States Mitis Co. v. Carnegie Co.,* 89 Fed. 343. There is no controversy as to the fact that the results obtained by the appellant in the way of air-lift and air-froth and ore concentration since January 9, 1917, are the same in kind as the results obtained for the preceding five and a half years.

A defendant cannot avoid the charge of infringement by sailing so close to the limitations of the patent (even assuming that the patent were in fact to be so limited) as to get substantially all the beneficial results while avoiding only the letter. The rule stated in *Westinghouse v. Boyden* disposes of this contention *infra,* p. 156).

If "all of the *efficient* elements of the combination are retained, or their places supplied by well-known equivalents," and if the "organization is essentially the same," there is infringement (*O'Reilly v. Morse,* 15 How. 62).

A fundamental inquiry is, has the defendant got the novel result and if so how does he get it (*Columbia Works v. Rutherford,* 58 Fed. 787).

> "It is the duty of courts and juries to look through the form for the substance of the invention—for that which entitled the inventor to his patent, and which the patent

> was designed to secure; where that is found, there is an infringement."

Winans v. Denmead, 15 How. 330.

A line of early cases similar on the facts to the case at bar are the following:

United Nickel v. Harris, 15 Blatchford 319; 24 Fed. Cas. 727, is one of a series of cases about a patent for a process of electro-deposition of nickel in a solution free from potash and soda and also free from acid. The defendant added small quantities of sulphate or chloride of potash or soda. The plaintiff claimed that this substance was inert, being in the chemical state of a sulphate or a chloride that did not result in the presence of free potash or soda. The court said:

> "If such sulphate or chloride is inert or is even of some benefit, its use is but an improvement, and the invention of the patentee is availed of, notwithstanding its introduction."

United Nickel v. Pendleton, 15 Fed. 739; 24 Fed. Cas. 732. This related to the same patent. Here the defendant put in some free acetic acid, and the court had great difficulty in deciding as to infringement because the claims said expressly that there must be no free acid; free acetic acid hindered the main process a little, but did not prevent it absolutely, and did something else that was helpful. Judge, afterward Justice, Blatchford, an able patent judge, held that that mixture, although it violated the letter of the claim, was an equivalent of the mixture of the claim, and an infringement.

These were the claims of the Adams patent:

> "1. The electro deposition of nickel by means of a solution of the double sulphate of nickel and ammonia, or a solution of the double chloride of nickel and ammonium, prepared and used in such a manner as to be free from the presence of potash, soda, alumina, lime or nitric acid, or from any acid or alkaline reaction. 4. For, the electro plating of metals with a coating of compact, coherent, tenacious, flexible nickel of sufficient thickness to protect the metal upon which the deposit is made from the action of corrosive agents with which the article may be brought in contact."

Judge Blatchford cited previous decisions on this same patent as follows:

> "In the Keith case in February, 1874, the validity of the patent was again sustained, and infringement of claim 1 was adjudged, because of a use, in the electro-deposition of nickel, of a solution of the double sulphate of nickel and ammonia, although such solution contained a small proportion of tartrate of ammonia, and a small proportion of ammonia, the first of these being an inert substance in the solution and the second being speedily eliminated by evaporation when the solution was used.
>
> "In the Harris case in October, 1878, the patent was held valid. Claim 1 was held to be a claim to the electro-deposition of nickel by means of any solution of the double sulphate of nickel and ammonia, or of any solution of the double chloride of nickel and ammonium, however such solution may be prepared, provided such solution is so used as to be free, while the electro-deposition of nickel is going on, from the presence of potash, soda, alumina, lime, or nitric acid, or from any acid or alkaline reaction. Infringement of that claim was adjudged, and it was held that although a sulphate or a chloride of potash or soda might be introduced into either of the named solutions, yet, if the solution was so used, in the electro-deposition of nickel, that the sulphate or the chloride would not be decomposed, the claim was infringed * * * (p. 741).

> "In the Manhattan Brass Case in March, 1879, infringement of claim 1 was adjudged, and it was held that that claim was infringed, although the salts of potash and soda were introduced into the solution, provided the solution was not so used as to liberate free potash or free soda."

Now, in this last case (the Pendleton case), which came before Judge Blatchford, the facts were that the defendant had added an acetate of nickel solution, and an excess of acetic acid. Said Judge Blatchford (p. 743):

> "The evidence shows that a pure acetate of nickel, used without an excess of acetic acid, will, under proper conditions of strength of current and strength of solution, produce such a reguline deposit of nickel as Adams' patent contemplates, and that the absence of any acid or alkaline reaction in the acetate produces the best results, especially as to the quantity of metal deposited with a given battery power in a given time. An excess of acetic acid impairs the efficiency of the solution. It is shown that the presence of an acid reaction, by turning litmus paper red, by no means indicates the presence of free acid, so as to make a practically injurious departure from neutrality, in the direction of acid reaction. On the other hand, it appears that an excess of acetic acid has the effect to neutralize the deleterious properties of such alkaline substances as soda, potash and lime, which, if finding their way into the solution, will injure the quality of the deposit. * * *
>
> "At the time of Adams' invention it was known that the addition of a slight excess of acid to a simple salt of nickel would prevent the deposit of oxide of nickel upon the cathode, by taking up the oxide, and thus act in the same manner as ammonia salts, in the solutions of the Adams' patent. Under the foregoing premises, as a simple acetate will produce a greater deposit of nickel for the same amount of current in a given time than will a simple acetate with a slight excess of acetic acid, and as such slight excess of acetic acid will prevent the injurious

deposit of oxide of nickel in case certain alkaline impurities are present, and as that result is accomplished in the same way as by the use of ammonia salts in the solution of Adams' patent, those solutions and the defendant's solution are equivalent, in nickel-plating, and in their mode of operation and in the character of the deposit.

"The fair reading of the Adams specification is that, in order to obtain the best results, the solution should be as nearly neutral as possible, and should be especially free from acid. The invention of Adams, as shown in his specification, so far as respects sulphuric and hydrochloric acid, was that the presence of such quantities of those acids as would be likely to get into the solutions named in claim 1, in preparing and using them, would prevent any useful result. Infringement of the claim cannot be avoided by introducing such small quantities of any of the injurious substances named by Adams as will produce no practical injurious effect. * * *

"Before Adams, no product possessing the properties described by him as those of his product was known. He introduced a new process, that of claim 1, as well as a new product or manufacture, that of claim 4. In attempts at nickel-plating before, acids had been used which were known solvents of nickel. Adams used those acids to prepare his solution. * * *

"Adams did not invent the solutions of claim 1. He showed how to prepare and use them successfully. The solution is the vehicle whereby the nickel is conveyed from the anode to the cathode, holding in suspension the nickel to be deposited, and supplying the place of the deposited nickel by taking other nickel from the anode. The real invention was in discovering the proper condition for the use of such vehicle, not the particular chemical composition of the vehicle. Any proper vehicle used with those conditions would do the work. * * *

"If claim 1 of the Adams patent claimed the discovery of a new solution, as does claim 1 of the defendant's patent, the question would be a different one. But the claim is a claim to a new method of using solutions, requiring specified conditions by the absence of specified injurious elements. The defendant uses his solution in

the same way, avoiding those injurious elements, and observing the prescribed conditions. * * *

"The case of *Tilghman v. Proctor,* 102 U. S. 707, is an authority for the conclusion that, on the foregoing facts, claim 1 of the Adams patent ought to have the construction above indicated, and that so construed, it is infringed by the defendant. It is a claim for a process which Adams invented. He describes a mode, and the best mode then known, of carrying it out with success. All that the defendant has done is not to vary the process, or its mode of working, or its essential conditions, but to apply a new solution worked in the same way and under the same conditions. It must, therefore, be held that infringement of claim 1 is established."

In *United Nickel Co. v. Central Pac. R. Co.*, 36 Fed. 186 (Ross, C. C., 9th Circ. 1888), the court in charging the jury, said that the Adams patent had been held valid by the courts many times, so that the "real inquiries will therefore be limited first to the question of infringement" and afterwards damages.

Page 188:

"If, therefore, you find from the evidence that defendant used the process described in the first claim, or manufactured the product described in the fourth claim, of the patent, you will find the question of infringement against the defendant.

"Nor can the plaintiff's patent be defeated by evasion—that is to say, by any mere colorable or unsubstantial change in the process or mode of bringing about the same result. Upon this point the language of Mr. Justice Blatchford in a case involving the infringement of the same claims of the same patent now before you, is very instructive. In that case the defendant claimed to have used, in the process of nickel-plating, a solution essentially different from that covered by the Adams patent."

After quoting much that we have quoted above, the court adds:

> "In the light of these instructions, it is for you gentlemen of the jury, to say from all of the evidence in the case, whether the defendant used one of the solutions referred to in the third claim of the patent, or some other solution, the chemical equivalent of it, in the process described in the first claim, or in the manufacture of the product described in the fourth claim of the patent; in other words, whether the alleged infringement has been established against the defendant."

An instructive case is *Perkins Electric Switch Mfg. Co. v. United Electric Const. Co.,* 191 Fed. 366 (C. C. A., 3rd Circ., Gray, Buffington and Lanning, C. Js., opinion by Buffington, C. J.).

Perkins' patent for an incandescent lamp socket held infringed—reversing the Circuit Court.

The court said (p. 368):

> "It follows, therefore, that closure or non-closure of the abutting chambers in respondent's device at the place where it is left open is a negligible, functionless matter. * * * Having, by virtue of this recessed location of the switch and the solid wall across the current path made the two chambers electrically insulate, does the respondent became a non-infringer by breaking down the wall at a point beyond, where whether it be perforate or imperforate in no way affects the working of the device?
>
> "Assuredly not, unless mere form and functional substance are the same thing. With as much justice could it be said that a ship that was staunch and tight below the water line was leaky because of its scupper holes."

Columbia Wire Co. v. Kokomo Steel & Wire Co., 143 Fed. 116 (C. C. A., 7th Circ., 1905, Grosscup, Baker and Seaman. C. Js. Opinion by Seaman, C. J.)

Patent held valid and infringed.

Page 122:

"We are of opinion that the means thus transposed in the appellee's machine, if not within the definition of colorable evasions which infringe the patent in any view of its scope, are plain appropriations of the essence of the Bates conception by equivalent means, and infringements of the patent within the well settled rule referred to. All the elements of the patent combination are employed with substantial identity in their use, and departure appears from the letter of the claims only, in the arrangement of these elements, without substantial difference in the principle of operation. The policy and rules of the patent law require that the patentee be protected against such evasions of the wording of a claim in form or nonessential details, when the substance of the invention is thus used and is unmistakably shown in the specifications and claims." (Winans v. Denmead, 15 How., 330, 343; 14 L. Ed. 717; 5 Notes U. S. Rep. 331; Ives v. Hamilton, 92 U. S. 426, 431; 23 L. Ed. 494; Machine Co. v. Murphy, 97 U. S. 120, 125; 24 L. Ed. 935, and 9 Notes U. S. Rep. 533; Elizabeth v. Paving Co., 97 U. S. 126, 137; 24 L. Ed. 1000; Hoyt v. Horne, 145 U. S. 302, 308; 12 Sup. Ct. 922; 36 L. Ed. 713; Westinghouse v. Boyden Power Brake Co., 170 U. S. 537, 568; 18 Sup. Ct. 707; 42 L. Ed. 1136; International Mfg. Co. v. H. F. Brammer Mfg. Co. [C. C. A.], 138 Fed. 396, 400.)

* * * * * *

Page 123:

"The remaining contention, that the appellee's device escapes infringement through its additional means and function in the automatic regulation of tension, does not impress us as tenable. * * * This is a mere addition to the patented machine, supplementing the function of one element, without changing the co-operative function of the wheels in their combination. So, assuming that it is an important improvement (which is disputed in the appellant's testimony) and patentable as an improvement, its association with the means of the prior patent is

unauthorized without license from such patentee." (Cochrane v. Deener, 94 U. S. 780, 787; 24 L. Ed. 139; Cantrell v. Wallick, 117 U. S. 689, 694; 6 Sup. Ct. 970; 29 L. Ed., 1017; Hoyt v. Horne, 145 U. S. 302, 309; 12 Sup. Ct. 922; 36 L. Ed. 713; Walker on Patents [3d Ed.] § 347).

"The alleged improver may have a valid patent for his new means and is entitled to its exclusive use; but the prior patent equally excludes him from the use of the prior invention, with or without his improvement."

In the case of *Ford v. Tannage Company,* 84 Fed. 644 (C. C. A., 3rd Circ., 1898, Acheson, C. J., and Butler and Kirkpatrick, D. Js., opinion by Kirkpatrick, D. J.), the patent was for a process of tawing hides by a bath of chrome salts followed by a bath evolving sulphurous acid, and the result was leather. The defendant used a bath of alum salt and chrome salt, followed by a bath evolving sulphurous acid, and the result was leather. Now a bath of alum salt, followed by the bath evolving sulphurous acid, would not produce leather. The court found, as a fact, that the addition of the alum salt by the defendant did not prevent the action of the chrome salt and that the result was chrome-tawed leather just the same, and held that the mere addition did not avoid infringement. The court said:

"It is clearly shown that the addition of the sulphate of alumina to the bath does not prevent the thorough absorption by the hide or skin of the bichromate of potash."

So here, the addition of the inert petroleum products and the fact that some of the pine oil is dissolved in the water, and that much of the petroleum oil is ab-

sorbed in the clay of the gangue slime, and that some of it flows off uselessly as oil, does not prevent the main process from proceeding by the co-action of a fraction of one per cent. of active froth-forming and froth-modifying oil with the agitation to produce modified air bubbles that separate and lift the mineral particles and hold them mechanically suspended in the bubble films of an air-froth.

Atlantic Giant v. Dittmar, 9 Fed. 316, is another example of *addition* not avoiding infringement, and *Washer Company v. Cramer,* 169 Fed., page 629, the latter by Judge Gray of the Circuit Court of Appeals of the Third Circuit. In the latter case a spring driving-handle moved a washtub back and forth, the flexibility of the handle cushioning the blow. The defendant put a fixed cushioning spring at each end of the travel of the handle, and used a handle that was only a little bit flexible, but the court said:

> "These cushioning springs were a mere addition to the complete structure of the complainant's device. They supplemented the cushioning function of the driving spring, but did not dispense with it. The defendants do not substitute anything for the patented device, but employ it in its entirety, and then merely add elements, which, without destroying its functions, supplement or partake of them."

In the *National Newsboard Company v. Elkhart,* 123 Fed. 431 (C. C. A., 7th Circ., Jenkins and Grosscup, C. Js., and Bunn, D. J., Opinion by Grosscup, C. J.), the patent was for grinding up old newspapers for pasteboard, the old ink being retained and that being the novelty. It had been the practice to bleach the old

ink off by a bleaching agent and then use the product for pasteboard, using ten or twenty per cent. of an alkali in hot water for the bleaching operation. The defendant there used one per cent. of alkali in cold water and of course contended that it was using the process of the prior art. But the court held that the defendant had infringed.

> "But there was no attempt at bleaching after the boiling and the alkali was insufficient to remove but little of the oils. Plainly the removal of the oils was not intended. The whole testimony impresses us with the belief that the introduction of the soda ash was intended, not to bring about a product essentially different from the patented product, but to interpose a process so colorably different that it might be used as a shelter against the charge of infringement."

And so it is here, because there is no possible reason or excuse in metallurgy or in common sense for this defendant to add in the mixing tank 12 to 18 lbs. of a wholly unnecessary, inert and non-frothing oil when it can do better work and make more money and have a more efficient concentration by using only the active frothing oil (which its mixture of course includes) in an amount much less than one per cent. on the ore.

Cowles v. Lowrey, 79 Fed. 331, is an example of a primary invention; a patent broadly construed; and an addition not avoiding infringement.

So *Goodwin v. Eastman,* 213 Fed. 231, a chemical case somewhat like this one; a pioneer patent; a broad construction.

Another line of authorities is what is called "the rule" of *Westinghouse v. Boyden,* 170 U. S. 537, 568. The rule stated there, and said there to have been repeatedly held by the court (although it did not find application to the facts of that case) is that:

> "a charge of infringement is sometimes made out, though the letter of the claims be avoided."

That is to say, even though the letter of our claim were limited to the addition in the mixing tank of a total of less than one per cent. of oil, active or inactive, frothing or non-frothing, beneficially used or mostly wasted, the charge of infringement might be made out even though a total of more than one per cent. of oil were added in the mixing tank. It would still remain to be determined whether an equivalent thing had not been done, whether the substance of the invention had not been taken.

Thus in *Topliff v. Topliff,* 145 U. S. 156, Mr. Justice Brown says:

> "The object of the patent law is to secure to inventors a monopoly of what they have actually invented or discovered, and it ought not to be defeated by a too strict and technical adherence to the letter of the statute, or by the application of artificial rules of interpretation."

In *Turrill v. R. R. Co.,* 1 Wall. 491, it is said:

> "Patents for inventions are not to be treated as mere monopolies, and, therefore, odious in the eyes of the law; but they are to receive a liberal construction, and under the fair application of the rule, *ut res magis valeat quam pereat,* are, if practicable, to be so interpreted as to uphold and not to destroy the right of the inventor."

In *Hoyt v. Horne,* 145 U. S. 302, the patent was for a rag machine in which the pulp circulated, so said the claim, in vertical planes and also was delivered into an upper section of the vat. Now the defendant did not circulate it in vertical planes but in horizontal planes. He did not deliver it into the upper part of the vat but into the lower part. But the court held that what he did constituted the substance of the operation and infringed; and, says the court, the device was "obviously intended to evade the wording of the claims."

Underfeed Stoker v. Sanford, 215 Fed. 392, is a good example of a departure from the letter of a claim being held not a departure from the substance. The claim included an air chamber "beneath the retort." The defendant bricked up that air chamber and wholly eliminated its useless function but achieved its useful function by making an outside air chamber contacting with parts of the sides of the retort that needed cooling but not "beneath the retort" and so kept the essential function, and he was held to infringe.

The rule of liberality in the construction of patents, for pioneer inventions and for inventions which, whether pioneer or not, have revolutionized or greatly advanced an art, is well illustrated in decisions of this court.

Thus in *Von Schmidt v. Bowers,* 80 Fed. 121, it was said by this court (p. 148):

> "The record shows that the complainant was the first to combine those elements at all, and that the functions

performed by his machine so constructed were entirely new. Hence he had the right to make the broad and generic claim embodied in claim 10, without any limitation as to the form of construction of the particular elements, and all subsequent machines which employ substantially the same means to accomplish the same result are infringements, notwithstanding the subsequent machine may contain improvements in separate mechanism which go to make up the machine."

and p. 151:

"Giving the complainant's patents the broad and liberal construction to which we think them justly entitled, it is clear that the second machine of the defendant constitutes an infringement, etc."

In *Letson v. Alaska Packers' Ass'n.*, 130 Fed. 129, this court said (p. 139):

"Before discussing the question of infringement, it is important to determine the nature of the Jensen invention, and to ascertain how far the claims thereof are affected by the prior state of the art."

After considering the prior state of the art the court continues (p. 140):

"So that while it cannot be said that the Jensen machine was a pioneer patent, in the sense that it was the very first to accomplish the result of heading filled cans, Jensen nevertheless was the first to successfully head filled cans with any practicable degree of speed or efficacy. He brought to success what prior inventors had essayed, and but very imperfectly accomplished. In so doing he adopted some devices that had been used before, combined them with others that had not been used and added the necessary elements to make a practical and successful machine. His combination and invention was, we think, more than a mere improvement or perfection of what had preceded it. It was of such novelty and importance as to constitute a distinct step in the progress of the art, and it went into immediate and extensive use. Its claims are therefore entitled to a fairly liberal con-

struction. Morley Machine Co. v. Lancaster, 129 U. S. 263, 273; 9 Sup. Ct. 299; 32 L. Ed. 715."

Some claims were held infringed, the court saying (p. 143):

"Infringement is not avoided by the fact that at the same time a revolutionary movement is imparted to the mechanism, which carries both the cap and the can during the operation. Ives v. Hamilton, 92 U. S. 426; 23 L. Ed. 494; Machine Co. v. Murphy, 97 U. S. 120; 24 L. Ed. 935; Brush v. Condit, 132 U. S. 39; 10 Sup. Ct. 1; 33 L. Ed. 251; Hoyt v. Horne, 145 U. S. 302; 12 Sup. Ct. 922; 36 L. Ed. 713."

And

"It is unimportant that the appellants do not accomplish by their plunger all that is accomplished by the appellee's. The two devices are the same, and the appellants cannot avoid infringement by failing to make use of the upper plunger for all purposes for which it might be used."

In *American Can Co. v. Hickmott Asparagus Canning Co.*, 142 Fed. 141, this court said (p. 144):

"The question which is presented to us on the appeal is one of infringement only, and in determining that question it becomes necessary to consider the nature of the Jordan invention, and to determine how far it is protected against the use of mechanical equivalents. Prior to the Jordan patent, can-bodies were formed upon non-rotating fixed horns, which were hollowed out in their interior and provided with mechanism to cause them to expand. Hooks were first formed on the ends of the sheets of tin for the interlocking seams. The sheets were then placed transversely across the upper surface of the fixed horn, and were shaped around it by folding arms curved to fit the horn and to cause the hooks to come into engagement. Then by the expansion of the horn the hooks were interlocked. The term 'mechanical equivalents' has a variable meaning, and is measured by the

character of the invention to which it is applied. The appellant contends that the Jordan invention was pioneer. But we think it cannot be said that Jordan was a pioneer inventor in the sense that he was the first to produce a machine to successfully form can-bodies. He was the first, however, to form can-bodies by the use of a rotating horn. In so doing, he made a highly meritorious improvement, and an invention which marks a distinct step in advance in the progress of the art, and which has gone into extensive and successful use. His invention must be accorded a place inferior, perhaps, to that of a primary invention, but far in advance of those which constitute but a slight improvement on the prior art. His claims, therefore, while not entitled to the broadest construction accorded to the former, are not to be restricted to the narrow construction applicable to the latter. He is entitled to the protection of the doctrine of equivalency in proportion to the nature of the advance which his invention indicates. In Penfield v. Chambers Bros. Co., 92 Fed. 630, 638; 34 C. C. A. 579, Judge Severens said:

"'The rule applicable to the determination of equivalency depends upon the importance and the breadth of the original invention, and does not depend upon the question whether it was the first in the field relating to that subject, but upon the degree of advancement which the invention has made in newness of discovery and utility; for there may be as much merit in bringing on a large illumination from a feeble start as in the conception of the first beclouded idea which may have originated in the course of study and discovery along that line.'

"See, also McCormick Harvesting Machine Co. v. Aultman, Miller & Co., 69 Fed. 371; 16 C. C. A. 259; Muller v. Tool Co., 77 Fed. 621; 23 C. C. A. 357; Letson v. Alaska Packers Ass'n, 130 Fed. 140; 64 C. C. A. 463; Miller v. Eagle Mfg. Co., 151 U. S. 186, 207; 14 Sup. Ct. 310; 38 L. Ed. 121.

"It is plain to be seen that the Jordan invention is not founded on the earlier art. There was nothing in the preceding inventions to suggest the idea of a rotatable horn and of attaching the edge of a sheet of tin thereto and rolling it up in the form of a can-body. His patent

is entitled, therefore, to stand for what the claims import, free from limitations imposed by the prior art."

In *Los Angeles Art Organ Co. v. Aeolian Co.*, 143 Fed. 880, this court said as to a patent for a mechanical musical instrument (p. 883):

> "It will thus be seen that the essence of their discovery, which is the gist of their invention, was by causing special control perforations in each sheet to exercise control over the other sheet, and over its driving mechanism, thus making the sheets themselves the instrumentality for retarding either sheet running ahead until the other sheet should catch up and re-establish exact synchronism. Such was also the gist of the patent obtained by Fleming.
>
> "This discovery was important. Tremaine & Pain were not mere improvers upon a prior machine which was capable of accomplishing the same general result. They brought to success what prior inventors had been unable to accomplish. It was difficult, and had been considered impossible. They adopted some devices that had been used before, combined them with others that had not been used, and added the necessary elements to make a practical operative machine. Their invention was therefore more than a mere improvement or perfection of what had preceded it. It was of such novelty and importance as to constitute a distinct step in the progress of the art and the claims of their patent are therefore entitled to a broad and liberal construction. * * * Appellant did not introduce any evidence, nor set up any patent, printed description, actual construction, or any other matter, prior to the invention of Tremaine & Pain, by which two music sheets were mutually controlled, nor was any evidence offered by appellant to anticipate or restrict any portion of the invention made by Tremaine & Pain. Under these circumstances it seems manifest that they were pioneers."

and p. 887:

> "We are of opinion that the Fleming patent clearly embodies the invention of Tremaine & Pain, and is an

infringement of that patent. It is true that Fleming made several minor changes in the arrangement of his mechanism, and constructed some parts in a different manner, but throughout the whole the essential principles of the Tremaine & Pain patent exist. When the discovery was made and explained to the public by Tremaine & Pain, it could readily be seen by other inventive and mechanical minds that the means by which the result was produced were simple and plain, and that the result could be accomplished by slight changes in the construction of the mechanical musical device. It is apparent that Fleming, with his intimate knowledge of the construction made under the Tremaine & Pain patent, was able to make changes in some of the means used, and in making these changes he may have improved in some particulars upon the means used in the prior invention.

"The rule is well settled that if two machines be substantially the same, and operate in the same manner, though they may differ in form, proportion and utility, they are the same in principle. As was said in *Converse v. Cannon*, 2 Woods, 7 Fed. Cas., No. 3144:

" 'In passing upon the issue of infringement, the question to be determined is whether, under a variation of form or by the use of a thing which bears a different name, the defendant accomplished by his machine the same purpose or effect as that accomplished by the patentee, or whether there is a real change of structure or purpose. If the change introduced by the defendant constitutes a mechanical equivalent in reference to the means used by the patentee, and if besides being an equivalent, it accomplishes something useful beyond the effect or purpose accomplished by the patentee, it will still be an infringement as respects what is covered by the patent, although the further advantage may be a patentable subject as an improvement on the former invention.' * * *

"In *Blandy v. Griffith*, 3 Fish. Pat. Cas., 609 Fed. Cas., No. 1529, the court said:

" 'As long as the root of the original conception remains in its completeness, the outgrowth—whatever shape it may take—belongs to him with whom the conception originated.' "

In *Holt Mfg. Co. v. Best Mfg. Co.,* 172 Fed. 409, this court said in defining a pioneer patent (p. 414):

> "We think it very plain, from what has been said, that Best cannot be properly regarded as *a pioneer inventor, who is one who stands at the head of the art, or who has at least made such a distinct step in its progress as to distinguish it from a mere improvement or perfection of what had gone before,* and that the court below should have so instructed the jury and not have left it to them to determine that question."

In *Parker v. Stebler,* 177 Fed. 210, this court said of a patent for a hand truck which was held valid and infringed (p. 214):

> "We think, in view of the prior art, that the Bryan invention marked a distinct step in advance, whereby a notable success was achieved, and that its claims are entitled to a fairly liberal construction."

In *Stebler v. Riverside H. Orange Growers' Ass'n.,* 205 Fed. 735, this court said (p. 739):

> "The defendants have appropriated the plaintiff's invention, the essence of which is the combination with a traveling belt (common to the Ish, Strain, and Parker machines) of a series of independent rotating units arranged in longitudinal succession parallel with the belt, each transversely adjustable. One who appropriates another's patented invention, even though he may add thereto another element to perform an additional function, is guilty of infringement. * * *
>
> "True, the plaintiff's rights do not extend beyond the claims in suit, and are subject to the limitations thereof; but the language of these claims is not, as argued by the defendants, to receive a narrow, literal construction. While the invention is not basic or primary, it is substantial and important, and is therefore entitled to a fair range of equivalents. Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U. S. 405; 28 Sup. Ct. 748; 52 L. Ed. 1122."

In *Detroit Copper Mining Co. v. Mine & Smelter S. Co.*, 215 Fed. 100, this court said of the patent for the Wilfley tables for water concentration (p. 103):

> "The improvement made by Wilfley, as measured by the prior art and as proven by the testimony, is evidently of such merit that the claims of his patent are entitled to a reasonably liberal construction. The mere form of his table does not measure the scope of his invention. He did more than to invent a table of a precise form and configuration. He discovered a method of application of principles and an effectual mode of operation, and the appellee should be protected in that feature of the combination which is new in principle and function."

After discussing the Deister table, used by the appellants, the court said:

> "We are of the opinion that the use of these deflected terminals so greatly reduced in elevation does not serve to differentiate the Deister table from that of the patent in suit, whether the space covered by them be regarded as substantially a smooth surface, as was held in Wilfley v. Denver Engineering Works Co. et al. (C. C.), 111 Fed. 760, and in Mine & Smelter Supply Co. v. Braeckel Concentrator Co. (D. C.), 107 Fed. 897, or whether they be regarded as a continuation of the riffles. There is presented in either view a table with riffles terminating in a diagonal course with reference to their general direction, a course which is essential to the successful operation of either table, and thereby the appellants have availed themselves of the distinctive feature of the Wilfley table, and therewith they have performed the same function by the same means, and in substantially the same manner, as in the Wilfley combination."

CIRCULATING MIDDLINGS.

Three or four of the appellant's witnesses, connected with the appellant and the allied companies of the

Jackling group, in presenting their facts and figures as to oil wasting operations have for the first time in their practice and experience and evidently as a new idea, and in most instances after failure to run their mills with 20 pounds or more of oil to the ton of ore, had the returned middlings analyzed for oil and have added that oil in their calculations and on their exhibits to the feed of new oil on the theory that it is just so much oil introduced to the head of the machine; and in this way apparently they hope to persuade the court that when they employ only 14 or 15 pounds of oil they are really employing 20 pounds or more. But the testimony of all the practical men produced for the appellees has shattered this theory and quite apart from that a brief consideration will show its fallacy.

These middlings are low grade concentrates which have been through the process but which require improvement in grade by retreatment in the process before they are ready for delivery as finished concentrates. The analyses of the oil in these middlings show the total quantity irrespective of condition. The oil in the middlings may be in the condition of a coating upon the metallic particles. All the metallic particles in the middlings should be thus coated. The oil in the middlings at appellant's mill may be largely or wholly absorbed already in the clay gangue slimes that are largely present in the middlings and useless for the purposes of the process. It may exist in the returned middlings as minute particles of semi-solid grease, each particle effectively enveloped with water and useless for

the process. It may exist in the form of a water-oil emulsion that would be useless for the purposes of the process. The theory takes no account of these things.

Again, the theory takes no account of the fact that if the returned middlings contain any oil in a condition fit and suitable for effective use in the process, that oil has emerged in that condition from one or other of the spitzkasten at the foot of the machine, which means that it has passed through the machine, that is to say, has passed through the process, without being utilized. Under stable conditions the pouring of usable because unused oil into the head of the machine with the middlings, means the pouring of usable because unused oil out of the foot of the machine to exactly the same amount. The theory overlooks this fact entirely. It adds the usable oil that flows into the sludge tank at the head of the machine, but forgets to subtract the equal amount of usable because unused oil delivered continuously from the foot of the machine. When this fact, however, is understood, it will be seen and realized that the assumption that a steady stream of oil suitable for the purposes of the process flows into the head of the machine all day long with the returned middlings, and is used in the process, includes equally the assumption that that precise amount of oil is flowing out at the foot of that machine in that same condition, and therefore is flowing constantly through the machine in that same condition, that is to say, unutilized. That amount of oil, therefore, might just as well flow down the outside

of the machine in a launder and then back with the middlings, and so on continuously.

The process in suit starts with an unoiled ore and water and as the process proceeds the metalliferous mineral particles become coated with oil. Any concentration effected by the process whether the concentrate froth is rich enough in metalliferous mineral to form a finished product or is to be deemed a middling and returned for further treatment, involves substantial increase in oil proportion in this concentrate froth as compared with the original mixture of unoiled ore, water and oil. For example, in the experiments performed by Prof. Chandler in the Hyde suit the original proportion of oil to the dry material or ore treated was .16%, 3.2 lbs. per ton (.64 grams to 400 grams), the average proportion of oil to dry material in the middlings was .33%, 6.6 lbs. per ton, and the average proportion of oil to dry material in the concentrates was .42%, 8.4 lbs. per ton (Vol. 2, pp. 160, 161). The oil proportion was more than doubled in the middlings and nearly trebled in the concentrates, but the metalliferous mineral proportion was increased in like ratios. The metalliferous mineral was oil-coated and whenever its proportion was increased the oil proportion was increased. The process was undoubtedly one employing 3.2 pounds of oil to the ton of ore, not either 6.6 lbs. or 8.4 lbs. per ton as in the two products of the process. In the middlings and concentrates *the oil was used oil* attached to the metalliferous mineral, and it would be ridiculous to say that, when you

carry this middling back to the point of beginning of the process where new ore and new oil were added, mix it with the new material and put it through the process again, you had thereby increased either the consumption of oil or the use of oil in the process. Yet this is the theory of appellant.

But the testimony absolutely disposes of this absurd contention.

Thus Greninger (Vol. 8, pp. 4342, 4343, Qs97-101) says that this oil theoretically returned in the middlings is never counted as oil supply, that it does not help extraction, that it does not save oil, and that the return of the middlings is only to raise the grade of the middlings.

So Mr. Chapman to the same effect (p. 4437, Q. 45).

So Mr. Wiggin of the Anaconda Company (pp. 4926-4928, Qs19-23) who testified:

> "Q20. Do you ever take into account the oil contained in the returned middlings in determining the consumption of oil in the process?
>
> A. We do not. * * *
>
> Q22. Does that return of middlings result in economy of oil in the total process so far as you have observed?
>
> A. No.
>
> Q23. In the matter of consumption of oil in the total process so far as you have observed, does it make any difference whether middlings are returned to the head of the same machine or are returned [sent] to a cleaner machine?
>
> A. I have observed that it makes no difference."

So also Mr. Rossberg, of the Timber Butte Mill, at p. 2361, Qs103-107.

It repeatedly appears in the testimony that, notwithstanding the presence of large amounts of oil in the middlings, this oil will not carry on the process and when the new feed of oil is discontinued, the work of the process stops (Punchon, Vol. 7, pp. 3849-3851; Sutherland, pp. 3852-3855).

It appears from the testimony of all the young men produced as witnesses by the appellant from the Jackling group of infringers (Dosenbach, the Janneys, Conrads, Wicks and Engelmann) and from the exhibit tables which they produce as to the practical operations of their respective companies, that none of them ever prior to late December, 1916, counted in as a part of the oil supply (or even measured or assayed) the oil delivered into the sludge tank as a part of the returned middlings. The idea of doing so seems never to have occurred to any of them until after the decision of the Supreme Court in the Hyde case, and in most instances after failure in their efforts to operate their mills at 20 pounds of oil to the ton of ore. Obviously the point is of no importance and only serves to accentuate the difficulties that all of these infringers have met with in their attempts to disguise their processes and to obtain the new results first obtained by the process in suit under conditions such as they hoped would enable them to evade the patent.

PRIOR PRACTICAL ART.

When the process of the patent in suit came into being the concentration of ores was being carried on by the wet or gravity or *water concentration process,* with employment of jigs, shaking tables, vanners, and the

like apparatus for washing the gangue away from the metal.

The efforts to utilize oil had produced only two processes which reached the mill. And these two processes failed in the mill.

One of these was the *Elmore oil-buoyancy flotation process.* As Mr. Ballantyne testified in 1912, in the Hyde suit:—

> "This process was to some extent successful in practice, but the technical literature showed that the Elmore process had been abandoned by 1905, and as I have stated, the process has not been heard of in practice for many years" (Vol. 2, p. 362).

Here the values went to the top.

The other of these oil processes was the *Cattermole metal-sinking process.* This received the most careful study in the laboratory from 1902 (Ballantyne, pp. 362, 363) up to the birth of the invention of the patent in suit in early March, 1905. It was in course of installation in Australia in a plant having a capacity of 100 long tons per day when the invention here in issue was made, and it was put to work in April, 1905 (Chapman, pp. 243-245, Qs15-21). It was operated for only a few days and then abandoned (Q22) and the apparatus was then operated with a makeshift hybrid process wherein the recovery was made by skin flotation on shaking tables, and the plant proceeded to run on these lines until the invention in suit saved the situation and relegated the Cattermole process, its modifications and its supplements, to desuetude.

In this Cattermole process the values went to the bottom.

PRIOR DOCUMENTS.

The above is the simple history of the practical prior art. But it is the privilege of a defendant to dig up from obscurity any and all public documents whatsoever, how little instructive they may have been to the practical art, and to endeavor to point out in these documents an anticipation of the invention. A considerable array of such documents is in evidence. Every one of them referred to at the trial herein except the California Journal of Technology, was in evidence in the Hyde case and was disposed of by the decree of the Supreme Court of the United States in that case. Other documents have been referred to which were not public documents, such as the Kirby patent applications (which became patents and therefore public documents subsequent to the birth of the invention in issue) and the Froment description. All of these private documents referred to at the trial herein were exhaustively discussed in the Hyde case and are disposed of by the decree of the Supreme Court in that case.

Appellant's brief does not mention the California Journal of Technology, the only new alleged anticipation. Apparently therefore it is abandoned. But while abandoning any defense of anticipation, appellant's brief is written throughout upon the false assumption that there existed in the prior art processes exactly the same as the process in suit except that they employed more oil. This is absolutely false, and its falsity can best be shown by a consideration of the actual dis-

closures of those documents of the prior art referred to in the new evidence in the case at bar.

HAYNES BRITISH PATENT.

This patent No. 488 of 1860 (printed Vol. 3, pp. 1265-1269) was offered in evidence in the Hyde suit and contains the first suggestion of the use of oil in ore concentration.

In the Hyde suit no witness for defendant referred to this patent. The evidence in behalf of plaintiffs describing it was uncontradicted and may be summarized as follows:

> "The Haynes British patent No. 488 of 1860 contains the first disclosure of the use of oil for ore concentration. The ore is mixed with oil to form a stiff paste, which is then kneaded with water to wash out the gangue. It is not a practical process" (Liebmann, Vol. 3, p. 751).

Dr. Chandler also described this process as one in which a stiff paste was formed with, in one instance 20% and in another instance 11% of oil to ore, and this paste was triturated in water to wash out the gangue (pp. 870, 871). Mr. Ballantyne also similarly described this process and said it was entirely impracticable, and never could have been of any use (Vol. 2, p. 379). This was all of the evidence in the Hyde case in regard to this patent. Nevertheless counsel for Hyde asserted in argument in this court that the Haynes patent disclosed a froth flotation process, substantially the same as and of equal efficiency and usefulness with the process in suit.

Contrasted with this wholly false representation as to the Haynes disclosure we find the Haynes process measured at its true value in the Privy Council judgment (*Ore Concentration Company Ltd. v. Sulphide Corporation Ltd.*, 31 R. P. C. 206), a copy of which appears in the Transcript of Record in the Supreme Court of the United States in the Hyde suit (annexed to the petition for rehearing in this court). We quote from that copy, page 749:

> "Haynes patent, published in 1860, describes a method of separation of metal from gangue by the use of an agent containing fatty or oleaginous matter. This document is, however, not more than an indication of the date at which attention was first directed to the affinity of oil for metals", etc.

In the trial of the present suit appellant's patent expert Dr. Sadtler classifies the Haynes invention as one in which all of the ore particles were agglomerated by oil into masses, from which the gangue was separated by a washing out process (Vol. 5, p. 2780), and says that he does not cite it "as prior art, strictly speaking" (p. 2842). This is accurate and disposes of the false representation made to this court in the Hyde suit that it discloses a mineral-froth-producing process.

EVERSON PATENT.

This patent No. 348,157 dated August 24, 1886 (printed Vol. 4, pp. 2057-2059), was one of the five patents finally relied upon in the Supreme Court by the respondent (defendant) in the Hyde suit as an anticipation of the patent in suit (see Opinion, pp. 1, 2). It

was also referred to as one of the two patents which the defendant Hyde selected as giving the whole basis of flotation concentration (Opinion, p. 2). The Supreme Court cites it as disclosing a process for utilizing the affinity of oil for metals (Opinion, p. 2) and cites it again as disclosing increase in the selective property of oils by the use of acid (*idem*). No further identified specific mention is made of this patent by the Supreme Court. It is undoubtedly included in the general classification as a process which

> "consisted in mixing finely crushed or powdered ore with water and oil, sometimes with acid added, and then in variously treating the mass—'the pulp'—this formed so as to separate *the oil, when it became impregnated or loaded with the metal and metal-bearing particles* from the valueless gangue" (Opinion, p. 2).

The Supreme Court then classifies all of these patents, including the Everson into either a "surface flotation process" or a "metal-sinking process." The first class is stated to depend upon oil-buoyancy for carrying the metal to the surface. There is no specific statement as to which of the five alleged anticipations are included in this class, although obviously it includes four of them, Froment, Glogner, Schwarz and Kirby. The other alleged anticipation considered by the Supreme Court and principally relied upon by the defendant was the Everson patent. It does not depend upon oil-buoyancy for carrying the metal *to the surface.* Its *first method,* wherein a little over 5% of oil is used (Liebmann, Vol. 3, p. 742) is clearly and admittedly a procedure wherein all of the particles of the metal are agglomerated by oil (in this case a com-

pound including oil) into a pasty mass or masses from which the gangue is separated by washing it out (Sadtler, Vol. 5, p. 2780; pp. 2843, 2844, Vol. 7, p. 3611). Its *second method* wherein 17 or 18% of oil is used (Liebmann, Vol. 3, p. 742; Sadtler, Vol. 5, p. 2845) does not employ sufficient oil to float the metal *to the surface* by oil buoyancy. In this second method the oil *lightens the metalliferous mineral* and *"the sand and mineral are merely transposed or their relative positions are reversed"* (Vol. 4, p. 2058, Everson Spec., p. 2, lines 108, 109) from the ordinary conditions which then prevailed in the "wet separation of ores" (Everson Spec., p. 2, lines 113, 114), so that the mixture of oil and mineral was removable, as Everson says, by "devices and methods now well known in wet separation of ores" (Everson Spec., p. 2, lines 105, 106). This Everson said could be accomplished "by means of a constant overflow of water from a washing out vessel" (Everson Spec., p. 2, lines 102-104). In testing the process plaintiff's experts at the time of the Hyde suit tried a washing out vessel such as was used in Everson's day for classifying the ore (and not for concentrating the ore) with an up current of water to carry away the mixed oil and metal in suspension, but the results were wholly unsatisfactory (Liebmann, Vol. 2, pp. 539, 540; Chandler, Vol. 3, pp. 872, 873; Higgins, p. 927, Q28). As Dr. Chandler says "the separation was a complete failure" (p. 873) and the assay of his test showed tailings richer than the original ore and concentrates leaner than the original ore (p. 927). This was disappointing. Finally, however,

after the closing of testimony in the Hyde suit, it was found that if the operation of separation were performed in a miners' washing pan or batea a fair concentration and substantial recovery were attainable (Higgins, Vol. 8, pp. 4464, 4467, Qs24-37). This experiment was performed at the present trial (pp. 4473, 4474, Qs57-60) and resulted in concentrating material containing 4.64% of copper to 12.8% of copper with a recovery of 53.8% of the metal (Vol. 9, p. 5562). This was contrasted with an ordinary operation of wet separation carried on in the batea wherein the sand was carried off in suspension in the overflow over the edge of the vessel, and the metal remained in the vessel (p. 4467, Qs38-40, and following cross and direct examination to Q58). Both experiments were representative of what would occur in a large operation on a shaking table such as was used in the wet concentration of ores at the time of the Everson invention (p. 4465, Q29), and the two experiments well illustrate Everson's statement that she reverses ordinary water concentration, and the experiment with oil demonstrates the possibility of a reasonable concentration even though with heavy losses in accordance with the disclosure of the Everson patent. In both experiments the escaping material overflows in suspension in the overflowing water. According to Everson the overflowing material is a mixture of oil and metal. With water concentration the overflowing material is sand. The fact that Everson's specified proportions exactly fit the standard batea (p. 4466, Q31) tends to confirm the view that appellees' experts have reproduced the identical experi-

ment which Mrs. Everson performed in her laboratory at the time of the making of the invention.

These batea experiments were repeated before the Supreme Court of the United States, with the consent of the Justices, after a statement had been made that they were not in evidence in the Hyde suit, but repeated experiments made in the Miami suit. This court did not see them, and they were not in the Hyde Record.

In view of the fact that wherever one material is separated from another by an overflow or upcurrent (Higgins, p. 4477, Q77) it sinks relatively to the overflow or upcurrent which carries it away, it would seem reasonable to conclude that the Supreme Court of the United States included the Everson second method as well as the Everson first method in its general class of metal sinking processes. Certainly the recovery of sand by overflow in ordinary ore concentration would not be a sand flotation process (Higgins, pp. 4476, 4477, Qs69-77), and therefore the recovery of mixed oil and metal under exactly similar conditions and with similar carrying off of the substance separated in suspension would not be a metal flotation process, and the term used by the Supreme Court "surface flotation process" is not applicable to either of these procedures.

Mr. Higgins gave several references to the literature of the days preceding the Everson invention wherein the word "floated" is used to describe the flowing off in suspension of particles heavier than water (p. 4477 et seq., Qs78-83; Qs92-95). This fully explains the use of the words "floated off" in her statement "by which

overflow the concentrate will be floated off'' (Everson Spec., p. 2, lines 104, 105), this statement being followed by that as to devices and methods then well known in wet separation of ores, and that ''the sand and mineral are merely transposed or their relative positions are reversed'' (Everson Spec., p. 2, lines 107-110).

The Supreme Court having decided that the Everson patent does not anticipate the patent in suit, it would seem to be unnecessary to give further consideration to that patent, and indeed the appellant did not at the trial of the present case attempt to demonstrate that in any apparatus known at the time of the Everson patent and then used in the wet concentration of ores it could carry out what its experts and the expert of the defendant in the Hyde suit put forward as their view of the Everson process. Appellant's testimony was confined to a reference to churns, oil-purifying apparatus, spitzkasten for classification with slime overflow, and dollies or mixing tubs, as apparatus that might possibly be used to carry on the Everson second method. One of these devices, called the ''Cataract Machine,'' an oil purifying device, was altered so as to make it possible to carry on in it a very violent agitation which abundantly aerated an ore pulp and with the use of an oil which apparently was a kerosene contaminated with a soluble frothing agent. It is to be remembered that the oil of Everson's second method was a petroleum oil only slightly heavier than kerosene, which cannot produce a froth, and that even for the production of an inflated oil mass or magma by

terrific agitation, the presence of a soluble frothing agent is necessary.

Cataract Oil-Purifying Machine.—This oil-purifying machine is described in a book by Andes published in 1882. In operation, by stirring, a circulation is established, outward in the lower part of the vessel, upward near the walls of the vessel and back into the middle. The description says:

> "The oil therefore makes a circuit and during this circuit there is so intensive a mixing and so powerful an agitation, and thereby so intimate a bringing in contact with the atmospheric air as can be obtained by no other machine and can be accomplished in no other way" (Vol. 5, p. 2853).

This is a description of such a stirring as constantly exposes new surfaces of the oil to the air. Probably the device was quite effective, operating in this manner, in the purification of oil. It is also said to be useful in mixing dry color with lacquer for making varnishes. Obviously it was never operated at such a speed as to beat the oil or varnish into a foam or froth. This would have been highly objectionable and the machine was not so constructed as to permit it to occur.

Obviously Mrs. Everson did not intend to include any such device in her statement as to the manner in which her process was to be carried out in practice, as follows:

> "A proper selection of devices for this purpose will be apparent to those skilled in the wet separation of ores" (Everson Spec., p. 2, lines 112-114).

If, therefore, it were possible in this oil-purifying device to replace the oil by an ore pulp, and by carrying on the operation which had characterized the device in the purification of oils to carry on in it the Everson process, that fact would be wholly irrelevant because it would be no part of the disclosure of the Everson patent.

In fact, however, appellant did not reproduce this Andes cataract machine and did not carry out in this cataract machine, with an ore pulp, the operation which characterized that machine. Appellant altered the oil-purifying device materially for the purpose of adapting it to what appellant wished it to do, and then carried on in it an operation wholly different from any operation such as characterized the apparatus disclosed. An examination of the drawing (Plaintiff's Exhibit 254), showing in contrast the cataract machine as disclosed by Andes and the so-called cataract machine as constructed by the appellant's experts, very clearly shows that the Andes machine as disclosed would not do what appellant wanted it to do and therefore appellant made a wholly different machine to accomplish its purpose of misrepresentation.

FRYER HILL PUBLICATION.

This document (printed, Vol. 3, pp. 1006-1008) was put in evidence by the complainants in the Hyde suit, after having been referred to in the cross-examination of Mr. Ballantyne and described by him as stating that experiments were being made "with a bulk oil process

for the concentration of dry silicious ores" (Vol. 2, pp. 459, 460, XQ117). Defendant's witnesses did not refer to it in that case. It fails to give a definite disclosure of any process. The name Everson does not appear in the publication. The description indicates that whatever it attempted to describe was a bulk oil or an oil-buoyancy flotation process. If it describes anything which grew out of Mrs. Everson's invention, then it shows that Mrs. Everson advanced to the point of oil-buoyancy flotation, thereby anticipating Elmore. In fact, however, the disclosure cannot anticipate anything as it does not make a full disclosure of any process.

There is not a word of evidence connecting this publication with Mrs. Everson. In commenting upon this disclosure Dr. Liebmann said that there were several facts appearing in the description which induced him to believe that this extract referred to an experiment according to the Everson patent (Vol. 2, p. 546, Q8), and Dr. Chandler said that it "describes an effort to use a process resembling the Everson process on silver ores" (Vol. 3, p. 873). Both are in agreement that no clear disclosure is contained in this document of any process. At the present trial appellant produced a wonderful product of the ingenuity of appellant's counsel which was alleged to be such a machine as is described in this publication, and operated it at a speed between 1400 and 1500 revolutions a minute (R., Dosenbach, p. 1216, Q31), and by this terrific agitation and the employment of an oil which was probably a kerosene contaminated by a soluble frothing agent, succeeded in producing a float containing a fair amount of metalliferous mineral.

Everything about this experiment was ridiculous. The character of the agitation is indicated in the publication by the description of the agitator as arastra-like, as well as by the description that the agitation keeps "the whole mixture in motion." The character of the result is indicated by the fact that it causes "the mineral-charged oil to float," and the statement that the oil is "laden with its precious freight" and the repeated further description of the product as "mineral-laden oil." The disclosure calls for the use of steam introduced at the bottom of the mixture and the injected steam in connection with the revolving device are said to jointly contribute to cause the "mineral-charged oil" to float. The appellant's operation of its spurious machine was a violent agitation for the purpose of aeration with no attempt whatsoever to utilize steam. This operation is well characterized by the testimony which Dr. Sadtler admits that he gave in cross-examination in the Miami case (Vol. 7, pp. 3688-3690) describing a similar operation of a similar machine (Dosenbach, Vol. 6, pp. 3398, 3399, XQs371-376) in which Dr. Sadtler said that there was nothing in this publication which defined the nature of the agitation, that the specific description therein was "a very vague statement," that the publication contained no directions as to the quantity or proportion of oil to be used or as to the speed of agitation or directions representing any definite mechanical structure, and finally that the "very vague outline of this newspaper article is entirely compatible or in accord with what could be done." The law is well settled that a disclosure relied upon to anticipate an invention

"must be an account of a complete and operative invention capable of being put into practical operation."

The above language is quoted from Seymour v. Osborne, 78 U. S. (11 Wall.), 516, 555. Obviously the Fryer-Hill publication does not disclose a mineral-froth-producing process.

CRILEY-EVERSON PUBLICATION.

This document (printed Vol. 3, p. 1009) was put in evidence by the complainants in the Hyde suit (Vol. 2, p. 460). Defendant's witnesses did not refer to it in that case. It was well described by Dr. Sadtler in the Miami trial, as admitted by him, as follows:

"It does not, as a disclosure, give enough details to make it possible to carry it out in a definite and accurate way. It leaves entirely too much to chance" (Vol. 7, p. 3691).

In the present case the extent of appellant's reliance upon this publication as stated by Dr. Sadtler was that it contributed

"only a picture of results of the account given in the Fryer-Hill publication" (p. 3782, RQ571).

This publication received the most careful consideration in the Privy Council case, Ore Concentration Company, Ltd., v. Sulphide Corporation, 31 R. P. C. 206. Lord Parmoor says:

"To this extract the attention of their Lordships was directed in considerable detail" (Hyde Supreme Court Record, p. 749).

And further:

> "Even if the test process is not to be discarded as a failure, it does no more than give information that if to a greased mixture of pulverized metal and rock you add boiling sulphuric acid in a sufficient quantity of water, in some way a differentiation is effected as between the metal and the gangue" (*idem*, pp. 749, 750).

The absence of any statement in this publication as to the amount of oil used makes it impossible to affirm or deny that there was sufficient oil for oil-buoyancy flotation. The character of the oil used, however, described as "black thick oil," indicates oil-buoyancy flotation. The statement as to the result, the flotation of "a thick scum of sulphurets" (sulphides) also indicates oil-buoyancy flotation, since the floating mass of oil and ore of the Elmore process well responds to that description. Nevertheless, in the Privy Council case it was rejected as not sufficiently definite to anticipate the Elmore process.

It was significant, in the Hyde suit, that although Dr. Byrnes, defendant's expert, admitted that he knew of this publication (Vol. 4, p. 1594, XQ88) he did not refer to it in his attempt to establish anticipation of the process in suit.

The only specific reference to this publication in the opinions in the Hyde suit was in that of this court, wherein it is joined to the Everson patent (214 Fed. 106).

In reversing the decree of this court, the Supreme Court did not refer to this Criley-Everson publication. Obviously no new statement of the law was required,

and a mere reading of the publication must lead to its rejection as not being "an account of a complete and operative invention capable of being put into practical operation" (Seymour v. Osborne, 78 U. S., 516, 555).

ELMORE PATENTS.

There are four of these patents in evidence, two for process and two for apparatus. Only the process patents need be considered.

The first process patent No. 676,679 of June 18, 1901, to F. E. Elmore (printed Vol. 4, pp. 2089-2092), discloses oil-buoyancy flotation. The amount of oil usually required is from 100% to 300% of the ore, although the latter figure in fact describes the total amount of oil used in three successive operations, which may be largely or wholly the same oil used over again after separation from the concentrate by a centrifugal separator. The agitation is of a very gentle nature and as carried on in the laboratory consists in carefully tipping a glass bottle or vessel containing the mixture about fifteen times, so that in each tipping operation the ore will flow downward and the oil upward, and metal particles will become entrapped in a floating mass of oil. This laboratory operation was described by Mr. Chapman in the Hyde suit (Vol. 2, pp. 287-289, XQs124-126). This Elmore specification well describes the essential operation as follows:

> "Then agitate the mixture without breaking up the oil into small globules. The metallic particles will adhere to the oil and be buoyed up and floated by it, while the

other constituents of the ore will remain in the water" (Spec., p. 1, lines 41-46).

The metal-carrying floating layer of oil is floated off and submitted to centrifugal action to separate as much as possible of the oil from the metal, and the oil is pumped back to a cistern for re-use, care being taken to keep air bubbles out of it. The specification says:

"In order to clear the oil from air bubbles I prefer to draw the oil up to the cistern by creating a partial vacuum in the cistern" (Spec., p. 1, line 104; p. 2, line 3).

The other process patent No. 689,070 of December 17, 1901, to A. S. Elmore (printed Vol. 4, pp. 2093-2095) merely adds to the first patent the use of acid, which

"greatly enhances the selective action of the oil" (Spec., p. 1, lines 29, 30).

This patent does not repeat all the details of the F. E. Elmore patent, and particularly does not repeat the limitation of that patent to the use of thick oil. In fact, the specification is quite indefinite, and this very indefiniteness accounts for the fact that, upon the British and the Australian patents corresponding to it, the great litigations which ended in the House of Lords and the Privy Council were carried on in the effort of the Elmores to dominate air-froth flotation by their patent for oil-buoyancy flotation.

The Elmore process reached the mill and was a hope of the metallurgical world in 1903. It was proved in the Hyde suit that it was tried at the Traversella Mine in Italy, where Froment was the engineer (Ballantyne,

Vol. 2, p. 433). Kirby refers to the Elmore process in his specification (Vol. 4, p. 743; Spec., p. 1, line 102; p. 2, line 3), as admitted by Dr. Sadtler (Vol. 7, p. 3733, XQs419, 420).

In Richards' Ore Dressing, Volume 1, published in 1903, the Elmore process under the heading of "Adhesion" is referred to as of possible use where ordinary wet concentration "altogether fails," because there is not sufficient difference in the weight between the mineral and gangue (Fulton, Vol. 8, pp. 4398, 4399).

Finally in November, 1903, three post-graduate students of the California University published an excellent description of the Elmore process as in use and of their laboratory experiments with it, which is in evidence as Defendant's Exhibit 47, California Journal of Technology. This article starts with "a brief outline of the process as it is in actual operation" (Vol. 9, p. 5036) "and now in successful operation" (p. 5037) and with an illustration of a large scale plant following closely the lines of the patent drawings.

The Elmore process was characterized by the Circuit Court of Appeals of the Third Circuit as one of the two "mill failures" in the efforts of the prior art to utilize oil in ore-concentration (Opinion, p. 8), the other mill failure being Cattermole.

FROMENT PATENTS.

These patents in the order of their dates are first, the Italian patent No. 63,723, dated May 20, 1902, the

latter being conceded to be the date at which it may be treated as effective (printed Vol. 3, pp. 1216-1218; translation, pp. 1218-1221), and then the British patent No. 12,778, dated June 4, 1902 (that being merely the date of the filing of the provisional specification) and effective as a patent as of its sealing date, which is stipulated to be August 18, 1903 (Vol. 2, p. 625). This patent was granted to Lake, a British patent agent, as a communication from Froment (printed Vol. 4, pp. 2196-2198).

Briefly the Froment patents describe a test tube experiment with 10 grams (two-fifths of an ounce) of ore, at least 11.7% of oil (234 pounds to the ton of ore), which in a brief agitation carried on for one second of time produces a floating magma of oil which carries metal particles in its mass and is inflated by gas bubbles. This floating magma diminishes in bulk and drops most of its metal when agitated for another second and is completely broken up and drops all its metal with a few seconds of agitation. This "metallic magma," as Froment designates it, looks like a froth, but is wholly different in structure from a froth such as characterizes the process in suit. It is not an assemblage of air bubbles carrying metallic particles in their films, but a mass of oil carrying metallic particles, this mass of oil being lightened by entangled gas bubbles, and thereby made light enough to float and unreliably carry a fair amount of metal, but with the metallic particles distributed through the oil and not attached to the air bubbles at all. For air in oil has no attraction for metallic particles (Vol. 8, pp. 4566, 4567; pp. 4225-

4229, Qs44-47). The production of Froment's magma is an interesting laboratory experiment, but the procedure never got beyond the laboratory and a magma of oil and metallic particles lightened by air bubbles such as Froment produced has never been of the slightest value in the concentration of ores.

The Italian patent describes the agitation in the only example of either specification, to wit, *a test tube experiment employing three-fifths of an ounce of ore,* as one wherein the mixture is

> "agitated for a second" (Vol. 2, p. 1219),

whereas the British specification, reflecting the caution of a British patent agent, says:

> "agitated for a brief space" (Vol. 4, p. 2195, line 37).

It may be noted that where at a later point in the specification the entire operation of completely separating the metalliferous particles from the gangue, including agitation and settling, are described, both the Italian and British specifications are in agreement in saying that this requires "only a few seconds" (Vol. 3, p. 1220; Vol. 4, p. 2196, line 4).

Another difference between the two documents is that the British patent contains a reference identifying the invention in its relation to the prior art, as customary in all British patents. This is as follows:

> "This invention has reference to the concentration of metalliferous ores and earths for the purpose of separating and recovering therefrom the finely divided metal or metallic compounds, and consists of a modification of what is known as *the oil process of ore concentration*" (Vol. 4, p. 2195, lines 17-20).

The only process known as "the oil process of ore concentration" in 1902 and 1903 (the complete specification was filed March 4, 1903) was the Elmore oil-buoyancy flotation process (Ballantyne, Vol. 2, p. 433; Liebmann, p. 626; Chandler, Vol. 3, p. 891). Mr. Ballantyne, in the testimony above cited, also testifies that the Elmore process had been tried at the Traversella Mine in Italy, where Froment was the engineer, and this testimony is uncontradicted, so that the evidence leaves no question but that the Elmore process was here referred to. When, later in the specification the oil used is described as "ordinary oil" p. 2195, line 35) there can be no doubt that the ordinary oil of the Elmore process, to-wit: heavy petroleum, is the oil thus referred to. Further, *the only oil named in any Froment document is "mineral engine oil"* (Froment description, Vol. 3, p. 1000), *which is the heavy petroleum of Elmore.*

The quantity of ordinary oil described in this specification is "a thin layer" (p. 2195, line 36) and the thinnest possible layer of such an oil that could be formed in a test tube such as would be used for carrying on the experiment described with its ten grams of three-fifths of an ounce of ore and thirty grams or about two ounces of water, would amount to 11.7% of the ore with the thinnest of these residuum oils, the other usual Elmore oil requirements 14.4% of oil to make a layer on water in such a test tube (Chandler, Vol. 3, p. 887; p. 911, Q126). Dr. Liebmann's determination of the least quantity of such an oil was 12½% (Vol 2, p. 634), and Mr. Chapman determined it as 12.6% (Vol. 3, p. 941). Dr. Liebmann's determination

also included the oils which defendant's expert, Dr. Byrnes, considered as falling under the Froment specification (Vol 2, p. 834), and these oils were olive oil, cottonseed oil and oleic acid (Vol 4, pp. 1520, 1521, 1528, 1529). Olive oil is Dr. Sadtler's interpretation, presented with elaborate explanation, but accompanied by the statement that the language of the specifications

> "does not give a definite description of the kind or amount of oil, but *we can make a guess* at how much he meant and what was the character of the oil" (Vol. 7, p. 3618).

Therefore as to all of the oils which defendant's experts in the Hyde suit or in the present suit have stated to be described by Froment, 12½% of oil is the smallest amount which will form the thinnest possible layer in the Froment disclosed experiment. In the trial of the present suit Dr. Sadtler, by warming the water, got about 9% of olive oil to just form a layer (Vol. 7, p. 3622), but obviously this was unjustified, as indeed he admits that there is no reference to heat in the Froment patents (Vol. 7, pp. 3768-3769, XQs546, 547). Further we have no right to assume that when Froment described the amount of oil that he used as "a thin layer" he meant the thinnest possible layer that could in any event be obtained. Without question his standard of comparison was the Elmore process. The Elmore layer under like conditions with 100% of oil is one inch thick (Chandler, Vol. 3, p. 879). A thin layer as compared with this might well be of substantial thickness, not less than one-eighth of an inch thick (Liebmann, Vol. 3, pp. 851, 852, RQ224). The absolute minimum of the thinnest possible layer with

ordinary oil of the oil process of ore concentration, 11.7%, can hardly be taken as Froment's recommendation. However, with this absolute minimum, Dr. Chandler exactly reproduced what Froment describes (Vol. 3, pp. 891, 892, Experiment 1). He shook the test tube for one second and obtained a magma one inch thick with fairly clean tailings at the bottom of the tube. He shook the test tube another second and the magma diminished to half an inch in thickness and much of the metal subsided. On the fifth repetition of this agitation the magma diminished to one-fourth its original size and was nearly all oil (p. 892).

As a further test using another oil, not disclosed by Froment, oleic acid, he used 1.6 cc. of 14.4% of oleic acid, just enough to form a layer, shook it for a second, and obtained a good half inch of magma, and repeated the operation as before and destroyed his magma, leaving nothing but a few clean bubbles and a little mineral floating by surface tension (pp. 892, 893).

These two experiments in the Hyde case remain uncontradicted as to operations or results in the case at bar. The first of them gives all that Froment disclosed to the world in his patents. At the trial Dr. Sadtler diminished his acid component to two drops, five drops being the minimum used by all other experimenters in this record, warmed the water to 37° Centigrade, or nearly 99° Fahrenheit (although he admitted that there was no mention of warming in the Froment patents) (Vol. 7, pp. 3768, 3769, XQs546, 547), used 9% of olive oil (which is not enough to form a layer unless the water is warmed), and by agitation for several

seconds produced a float which no one measured and which he called a froth (Vol. 7, pp. 3634, 3635, Qs184-187). This was not an experiment according to the Froment patents or anything else in the prior act.

It is interesting that the full amount of sulphuric acid which would be required to decompose the gram of limestone specified by Froment is 1 gram, or from 23 to 32 drops (Chandler, Vol. 3, p. 586; accepted by Dr. Sadtler, Vol. 7, p. 3617), and that Froment suggests limiting the violence and explosiveness of the reaction, not by diminishing the amount of sulphuric acid, but by avoiding the use of limestone "in excess" (Vol. 4, p. 2195, line 40). Reduction in the amount of sulphuric acid is not therefore in accordance with the disclosure.

As a single example of careless statement amounting to a misrepresentation on the part of Dr. Sadtler, we may note that in attempting to justify his diminution in the amount of sulphuric acid used, he quotes Dr. Liebmann's testimony (Vol. 3, p 768, XQ62) describing an experiment made for the purpose of showing that Dr. Byrnes' spurious Froment operations were unjustifiable, and then says that he (Dr. Sadtler) "would not go quite that far" (Vol. 7, p. 3631). In cross examination he was finally led not only to admit that what he had quoted as interpretation of Froment was not interpretation of Froment, but also to criticize Dr. Byrnes' spurious experiments alleged to represent Froment by stating that he would not "illustrate the Froment experiment that way" (Vol. 7, pp. 3745-3749, XQs468-476).

The effort of the present appellant to misrepresent the Froment disclosure is quite in line with what was done by the defendant in the Hyde suit, but the whole subject of Froment was disposed of by the Supreme Court decision in the Hyde suit.

Supreme Court Decision as to Froment. Mr. Justice Clarke makes several references to Froment's total contribution to the knowledge of the art. He refers to the Froment British and Italian patents as among the patents finally relied upon by defendant as anticipations (Opinion, p. 2), and again refers to the Froment British patent as one of the two patents selected by the defendant Hyde, as giving the whole basis of flotation concentration (*idem*). The only further specific reference to Froment is as follows:

> "Froment Great Britain patent (1903) and the Kirby United States patent (applied for in 1903 and granted in 1906) are especially suggestive of the advance which was being made to the desired result, but the Froment process was little more than a laboratory experiment and has never proved of value in practice" (Opinion, p. 4).

This dismissed the Froment patents and the Froment description, next to be considered, as "little more than a laboratory experiment" and as merely suggestive of advance towards the invention in suit, tending to diminish it may be, the length of the step which the patentees took from Elmore, a workable flotation process, to the process in suit, which "converted experiment into solution, 'turned failure into success'" (Opinion pp. 7, 8), and wholly failing to anticipate the invention in issue.

The analogy is close between the case at bar and the Telephone cases (126 U. S. 1). There Reis had invented, widely published, and used a device for reproducing sound, which conveyed musical tones. Its fault was that the vibrations of the diaphragm opened and closed the electric circuit. By a trifling adjustment, the tightening of a screw, or the stiffening of a spring, it was possible to prevent the opening and closing of the circuit and to obtain the unbroken electrical undulations which characterized Bell's invention. This last step he failed to take. After the Bell invention had been made and published the Reis instrument was adjusted so that it transmitted speech. The prior art disclosed every detail of the Bell invention except the one point of adjustment so that the current would not be broken (126 U. S., pp. 539-545). As Mr. Chief Justice Waite said:

> "Under such circumstances it is impossible to hold that what Reis did was an anticipation of the discovery of Bell. To follow Reis is to fail, but to follow Bell is to succeed. The difference between the two is just the difference between failure and success. If Reis had kept on he might have found out the way to succeed. He stopped and failed. Bell took up his work and carried it on to a successful result" (p. 545).

Again contrasting the work of Reis and that of Bell the court says as to Bell's process patent:

> "His patent would be quite as good if he had actually used Reis' apparatus in developing the process for which it was granted" (p. 540).

With Bell's invention the practical art of telephony commenced. With the invention here in suit the practi-

cal art of air-froth flotation concentration commenced. Both inventions were founded upon discoveries which took the final steps that converted experiment into solution, turned failure into success.

FROMENT DESCRIPTION.

This private document (printed Vol. 3, pp. 990-996; translation, pp. 996-1005; drawings, pp. 1312, 1313) was voluntarily produced by Mr. Picard from the files of Mineral Separation, Ltd., during his testimony as a voluntary witness for defendant in the Hyde suit (Vol. 4, p. 1708), and thereafter put in evidence by complainants. It was so fully considered in the opinion of the District Court in the Hyde suit (207 Fed. 958-962), that the Supreme Court merely refers to it generally in its characterization of the Froment process as a disclosure which "has never proved of value in practice" (Opinion p. 4). In the Miami suit it was fully considered, upon "voluminous and conflicting" evidence, and dismissed by Judge Bradford (237 Fed. 626, 627). The Circuit Court of Appeals for the Third Circuit did not specifically refer to it.

The disclosures of this private description and all the circumstances connected with them were fully presented and explained in the Hyde record, and upon that record the Supreme Court of the United States has found no anticipation of the process in suit. The voluminous evidence on the same subject in the Miami record was not presented to this court by the defendant. In fact, in the case at bar no demonstrations were made pur-

porting to represent these disclosures, and there was no testimony of any moment in regard to them. It is, therefore, deemed unnecessary to again present the arguments on this subject heretofore fully considered by this court and approved by the Supreme Court of the United States.

When the Hyde case was argued in this court the counsel for Hyde exhibited a demonstration alleged to represent the Froment description. There was no foundation for this demonstration in the evidence. The defendant in the Hyde suit did not (nor did the appellant here) put in evidence an experiment even alleged to represent the Froment description. We have no hesitation in characterizing the demonstration made in this court in behalf of the defendant Hyde which was alleged to represent the Froment description, as a sham and a fraud, and the fact that it was not repeated in the Supreme Court, and especially that it was not repeated at the trial of the present suit, at which all materials and results were subjected to chemical analysis or assays, would seem to establish the truth of our assertion. This court was informed by counsel for Hyde that the Froment description disclosed a froth flotation process wherein the use of one per cent. of oil was suggested as the minimum. *The fact is that the Froment description did not disclose a froth flotation process at all.* Aside from all other considerations the oil of the Froment description was mineral engine oil (Vol. 3, p. 1000, line 7), a heavy petroleum non-frothing oil, the oil of the Elmore process, incapable of effecting the recovery of metalliferous mineral in a froth. That fact

was not proved in the Hyde suit but is fully proved in the suit at bar.

CATTERMOLE PATENTS.

Cattermole Patent No. 777,273. In the Hyde suit the defendant put in evidence the principal Cattermole patent No. 777,273 of December 13, 1904 (printed Vol. 4, pp. 2136-2140). This patent was exhaustively considered in the Hyde case. It is briefly and accurately described in the opinion of the District Court in the Hyde case (207 Fed. 957, 958). It was referred to in the Supreme Court opinion as one of the patents disclosing the advantage of the use of acid in addition to oil (Opinion, p. 2), and selected by the Supreme Court as the example of the "metal sinking process" (Opinion, p. 3). It was again referred to by the Supreme Court as a process upon which the inventors of the process in suit were at work when they discovered the process in suit (Opinion, p. 4). Obviously the Supreme Court has construed it as disclosing a metal sinking process and not disclosing a metal-froth-forming process in any respect whatsoever.

In the trial of the case at bar appellant merely performed a hybrid experiment in which Cattermole was practically spoiled and the process of the patent in suit impaired. The amount of oil used was 1½% of the weight of the ore (Dosenbach, Vol. 6, p. 3333, Q83), and by reason of the low metalliferous mineral content of the material used this was about 7% of the metalliferous mineral (p. 3334, Qs91-94). Agitation was carried on

at 1450 revolutions per minute (Q102), and a mineral float was formed which was a low grade mineral froth (42.60% zinc; Vol. 9, p. 5543), weakly holding the mineral particles. The operation was then repeated at the slow speed of 300 revolutions per minute (p. 3336, Q103), but with other conditions the same, and this resulted in separating the air bubbles from the metalliferous mineral particles by centrifugal action without aeration so that the metalliferous mineral particles sank (Q106). Then the Gabbett was speeded up to about 1450 or 1500 revolutions (Q115, 116), and the result was a similar froth of still lower grade (40.70% zinc; Vol. 9, p. 5543). Then the machine was rotated at the slow speed of 300 revolutions per minute, and the air bubbles again separated from the metallic particles (p. 3340, Q126). Then the metalliferous mineral particles were separated in an upcast *(idem)*.

The result of this hybrid experiment was that the separated metalliferous mineral particles which sank in the upcast, to some extent agglomerated together, but not by any means into well formed granules. The difference in specific gravity between mineral and gangue, about 4½ to 1½ (Higgins, p. 4530, Q332; p. 4781, RQ244), was sufficient to account for the upcast separation without honestly carrying out the Cattermole process.

A comparison is instructive of the assay results of this alleged Cattermole experiment, concentrates 32.70% of zinc and 35.60% of insoluble or gangue, tailings 3.90% zinc (Vol. 9, p. 5543) (78 pounds of zinc going to waste in each ton of tailings), with Mr. Higgins' genuine Cattermole experiment with the same ore, con-

centrates 56.63% of zinc and 2.53% of insoluble or gangue, tailings 1.99% zinc (Vol. 9, p. 5562). Mr. Dosenbach's results show that he was not carrying on a metallurgical process but merely juggling with hybrid conditions.

It is to be noted that in 1905 it was determined that for carrying on the Cattermole process

> "speeds of rotation (with a small Gabbett) varying from 3 [hundred] to 500 revolutions per minute proved almost useless" (Sulman & Picard Report March 3, 1905, Vol. 3, p. 1100),

and that Mr. Higgins' tests reported March 2, 1905, as to the effect of variations of speed in the Cattermole process covered a range of from 840 to 1462 revolutions per minute. This speed of 840 revolutions per minute is the slowest speed described as producing any result in all of the Sulman and Picard and Higgins' reports. The appellant therefore in selecting 300 revolutions per minute as a speed for a Cattermole operation, selected a useless speed, and obtained in fact a centrifugal action for separating air bubbles from metalliferous mineral particles. And by increasing the amount of mineral-froth-forming oil to 1.5% on the ore he so weakened the attraction of air bubbles for the mineral particles that his froth was easily destructible.

Mr. Higgins properly criticizes this experiment and says that it did not produce granules at all, but merely possibly some attachment between coarse mineral and fine mineral which might be called agglomeration, but in no sense granules (Vol. 8, p. 4529, Qs329, 330), and that the centrifugal action resulting from the low speed pro-

duced centrifugal separation (Q331) and that the operation was not a carrying on of the Cattermole process (Q333). This was repeated in cross-examination (pp. 4760-4765, XQs145-173).

Mr. Higgins carried on the Cattermole process in a Gabbett in accordance with the disclosures of the Cattermole patent, using a rather large percentage of oil, by reason of the very finely ground condition of the ore, 5% on the ore and about 15% on the metalliferous mineral (p. 4526, Qs315, 316). He stopped at the conclusion of the agitation to show that no froth was formed (Qs 323, 324). The speed of revolution was about 850 revolutions per minute (Q315) and the recovery was 93.6% in a high grade concentrate containing 56.63% of zinc and only 2.53% of insoluble or gangue (Vol. 9, p. 5562).

Contrasting this experiment with Mr. Dosenbach's series of manipulations with 1½% of oil to ore (in the absence of the assays not then produced) he says that the results showed that for this operation in a single Gabbett and with a single upcast the proportion of 15% on the mineral and 5% on the ore was an excellent proportion to take (p. 4530, Q336) and that the production of the Cattermole result is the proper criterion for the determination of the right amount of oil to use (Qs337, 338) and that you cannot arrive at the proper proportion as a matter of mathematics because Cattermole gives his oil proportions as dependent on no less than seven different factors, and does not give the different rates at which the oil varies with these factors so that

it is quite impossible to calculate the amount of oil you should use (Q340).

The statement that the Cattermole patents recommend a proportion of oil which, with lean ores, would be less than one per cent. of the ore, is and has been throughout the entire American litigation a favorite fiction of counsel for defendants, and this fiction is repeated in appellant's brief (p. 9). Counsel for defendant in the Hyde suit so stated in this court and in the Supreme Court of the United States, and the Supreme Court in its decision called attention to the reference in the Cattermole patent to 10% on the metalliferous mineral (Opinion, p. 3). The fact is that Cattermole directs the user to determine the proper amount of oil by actual tests, stating seven factors, viz: (1) kind of oil, (2) viscosity of the oil, (3) fineness of the ore, (4) the nature of the metalliferous mineral in the ore, (5) the nature of the gangue in the ore, (6) the relative proportion of gangue to mineral and (7) the consistency and size of mineral granules desired, with the general statement that there are "other factors" (p. 2138, lines 64, 65), and says that the proportion of oil should be "kept within reasonably low limits, differing in different cases," etc. (p. 2137, lines 9, 10). The standard of the art in his day was Elmore, requiring at least a ton of oil to a ton or ore. With all these qualifications, he suggests that usually an amount of oil varying from 4% to 6% of the metalliferous minerals will give suitable granules, but in the same paragraph mentions 10% as a proportion which will produce granules. Then he cautions the user that a lean ore must be enriched

or in some way provided with an increased amount of metalliferous or other matter having an affinity for oil (p. 2139, lines 34-43). Obviously the only method of determining the proper amount of a given oil for use with a given ore, is that of trial. Mr. Higgins has found, as above noted, that with appellant's ore in the finely ground condition used, 15% on the metalliferous mineral (5% on the ore) gives excellent granules. Appellant has failed to give a single example of the carrying out of the Cattermole granule-forming metal-sinking process with less than one per cent. of oil to ore. In fact there is no evidence that the appellant's experts ever carried on the Cattermole process with any percentage of oil. In the Hyde case defendant's expert, Dr. Byrnes, merely theorized arithmetically. In the present case Mr. Dosenbach carried on an experiment that did not produce granules. In practice the standard of the Cattermole process was 5% of the metalliferous mineral in an ore containing upward of 50% of metalliferous mineral (Chapman, Vol. 2, pp. 240, 241, Q9). This was upwards of 2½% on the ore, 50 pounds or more to the ton of ore. In the laboratory smaller amounts were sometimes used, but never less than 1½% on the ore.

In the argument of the Hyde case before this Court counsel for defendant Hyde asserted that the Cattermole process consisted of two stages, first a violent agitation, which produced a froth, and then a slow smooth stirring, which sunk the mineral. This argument was ingeniously fabricated upon the facts that the Cattermole patent 777,273 shows a two-stage agita-

tion (but with both stages of the same intensity, and an intermediate recovery of everything that sank and a loss of everything that floated), and that as the Cattermole process developed in the laboratory, it was found advantageous to employ a first and violent agitation, which produced sinking granules, followed by a second and slower agitation which completed the conditions for final separation by sinking the granules (Chapman, Vol. 2, pp. 238, 239). *In both instances, however, the agitation of the first stage was immediately followed by separation in an upcast which would have carried away to waste any mineral froth, and which saved for further use in the process only the material that sank in the upcast.* This is plainly apparent in the patent drawing (Vol. 4, p. 2136) and is described in the specification (p. 2138, lines 8-24), and was specifically stated in the reports and by the witnesses. Mr. Chapman said:

> "The first agitation was of a very violent type to bring about the oiling of the sulphide mineral. *The agitated pulp was then passed to a small glass upcast where the fine gangue slimes were washed from the pulp,* allowing only the oiled metalliferous particles and the coarse gangue [*which sank in the upcast*] to pass to the second stage of the process, which consisted of slowly rolling in the same type of mixer as used in the first stage but with the baffles taken out and the speed of the cones much reduced" (pp. 238, 239).

The evidence also shows that in the final Cattermole experiments, made in the London laboratory while Mr. Chapman was in Australia installing the Cattermole process, it was found advantageous to do away with two-stage agitation, and to follow a single stage prolonged agitation by a single separation of sinking gran-

ules in an upcast (Sulman & Picard Report of Feb. 21, 1905, Vol. 2, pp. 1088, 1089, par. 5). This was, however, never tried in practice and the Cattermole process failed in the mill and was abandoned before the knowledge of the invention in suit reached Australia and saved the venture.

An interesting experiment contrasting the process in suit and the Cattermole process was shown by Mr. Higgins at the trial. In a Gabbett, at between 850 and 900 revolutions per minute, with appellant's ore and two pounds of oleic acid to the ton of ore, .1%, Mr. Higgins produced an excellent mineral froth (Vol. 8, pp. 4747, 4748, Qs84-86). Then he added 3.6%, 72 pounds to the ton of ore, of oleic acid, making a total of 3.7%, or 74 pounds to the ton (Q93) repeated the same agitation, and the froth was wholly destroyed and granules formed (Qs94-96). To show that high speed was not injurious Mr. Higgins then ran the machine at over 1500 revolutions per minute, but the result was just the same as at the lower speed. Excellent granules were removed from the bottom of the vessel which had taken up practically the whole of the metalliferous mineral (Q100).

Cattermole patent No. 763,259 (printed Vol. 3, pp. 1246-1249). This patent is mentioned by appellant's expert Dr. Sadtler as stating the advantage of fine pulverization in the Cattermole process (Vol. 5, p. 2788). The ability to treat slimes and the fact that the best results were obtained with fine grinding, were undoubtedly great advantages of the Cattermole process. As Mr. Higgins says the Cattermole process was "the first

process to successfully concentrate slime material'' (Vol. 8, p. 4521, XQ290). It was characteristic of that process that

> ''the finer the ore the more compact and cohesive are the granules formed from it'' (Vol. 3, p. 1247, Spec. p. 1, lines 90-92),

as quoted by Dr. Sadtler in his testimony above referred to.

This patent happens to be the lowest numbered and one of the two earliest issued of the Cattermole series. It does not disclose a process of concentrating ores. It discloses a process for breaking down or disintegrating the sunken granules produced in the Cattermole ore-concentrating process, so as to obtain as separate products the sulphides of the different metals. It specifically refers to ''Broken Hill ore'' (Spec., p. 2, line 74) as the specific example of the ore the granules produced from which are to be thus treated.

Cattermole patent No. 763,260 (printed Vol. 3, pp. 1250-1253). This patent like that last referred to, was put in evidence by the complainants in the Hyde suit. It was issued June 21, 1904, on an application divided out from the application on which patent No. 777,273 issued, and covers the modification of the Cattermole process wherein the circuit is alkaline. In patent No. 777,273 there are broad claims (1 and 2) not limited to acidity or alkalinity. The remaining claims are specific to the presence of an acid. In this divisional case the claims are all limited to the presence of an alkaline emulsifying agent. In other respects the disclosure is the same as in patent No. 777,273, and like

that patent it specifically cautions the user that a lean ore must be enriched (Spec., p. 3, lines 26-35).

SULMAN & PICARD PATENT NO. 793,808.

This patent issued July 4, 1905 (printed Vol. 4, pp. 2146-2150), after the birth of the invention here in issue, but on application filed October 5, 1903, when there was some hope of making something out of this skin flotation process. In the Hyde suit Dr. Byrnes misrepresented it as a froth producing process, testifying that he had reproduced the apparatus of Figure 1 of this patent, had used the revolving worm to produce a vigorous agitation, and had obtained a thick and satisfactory froth (Vol. 4, p. 1527). His apparatus was put in evidence and delivered to complainants, and they were unable to obtain these results and with repeated tests only produced skin flotation (Vol. 2, pp. 585-588) and Dr. Byrnes' evidence was further criticized (pp. 589-594).

At the present trial there was in behalf of appellant only a feeble reference to this patent as disclosing the use of gas bubbles for the purpose of floating metalliferous mineral particles to the surface of a pulp (Sadtler, Vol. 5, p. 2785). This is in fact disclosed under conditions both as to the oil proportions described (from moistening the particles up to a maximum less than oil-buoyancy flotation) and general conditions of procedure such as inhibit froth formation. The air or gas bubbles, according to this process, escort

the metalliferous mineral particles to the surface and leave them there.

Mr. Higgins briefly refers to this testimony of Dr. Sadtler (Vol. 8, p. 4594, Q374). He says that in this process, where gaseous bubbles are used, they carry the mineral to the surface and burst, and the mineral either sinks or floats, like the greased needle, by skin flotation. He further says that there is in this patent no disclosure of any froth whatever. He further says that the specification also discloses flotation without the employment of any gaseous bubbles, and refers to the three variations of apparatus shown in the drawings, each of which produces skin flotation (*idem*).

It may be noted generally that the patent discloses three general methods (1) flotation of oil-moistened particles where the oil is "insufficient to raise the oiled mineral by virtue of the flotation power of the oil alone" (Vol. 4, p. 2149; Spec., p. 1, lines 25-28) without any description of apparatus; (2) flotation carried on in the apparatus of Fig. 1 wherein the mineral is oiled by carrying atomized or vaporized oil with air or gas into the pulp through perforations in a revolving worm; (3) flotation by spraying or throwing the oiled mineral upon the surface of water, carried on in the two varieties of apparatus shown in Figs. 2 and 3.

Although little was heard of this patent in the Hyde case after exposure of the erroneous testimony of Dr. Byrnes, it was relied upon in the Miami case, and Judge Bradford fully considers it and says that it "affords cogent circumstantial evidence of the patentability of the process of the first patent in suit" (the patent here

in suit) (237 Fed., 628). The Circuit Court of Appeals of the Third Circuit also refers to this patent (Opinion, p. 6; pp. 26, 27), and dismisses it either as an anticipation or as justifying the use by defendant of the Callow cell.

KIRBY PATENTS.

There are two Kirby patents. The process patent No. 809,959 issued January 16, 1906 (printed Vol. 4, pp. 2158-2166), on an application filed December 14, 1903, and the apparatus patent No. 838,626 issued December 18, 1906, on an application filed December 17, 1903 (printed Vol. 4, pp. 2176-2180). Although these patents, and particularly the process patent, were fully considered in the Hyde case and prominently presented by the defendant there in the arguments before this court and the Supreme Court of the United States, and were disposed of as anticipations by the Supreme Court of the United States, the appellant here has again presented them with an elaborateness far beyond any possible value that can be attached to them. It is to be noted, however, that the Kirby patents are not specifically referred to in appellant's brief. The general references to "prior-art quantities of oil" and "prior-art froths" (p. 29) are undoubtedly intended to refer to Kirby. But Kirby is not named.

The evidence at the trial of the case at bar for the first time exposed the character of the spurious experiments alleged to represent this process made on behalf of the defendants at the argument before this court, the

Supreme Court of the United States, the District Court at Wilmington, and the Circuit Court of Appeals at Philadelphia.

The secret of the success of these operations, which plaintiffs could not then duplicate, was the presence of a soluble frothing agent contaminating the kerosene oil. At the present trial Mr. Phillips performed an experiment with 25% of alleged kerosene oil in a small square glass jar (Vol. 6, p. 2920; pp. 2922, 2923) with an agitator known as a bar mixer. Floating material carrying a fair amount of mineral was produced, and this was called a froth and was said to be a reproduction of the experiments shown in Phillips' photographs 18-1, 18-2 and 18-3 (Vol. 9, pp. 5116-5118). At the request of appellees' counsel this machine was delivered to appellees' experts with specimens of the materials used. The speed of agitation was found to be between 9,000 and 10,000 revolutions per minute (Higgins, Vol. 8, p. 4604, Qs410, 411) with a very small agitator, giving a peripheral speed of about 1,800 peripheral feet per minute (Q412). The experiment was repeated by Mr. Higgins with these materials and he got the same result as Mr. Phillips (p. 4617, Qs481, 482), but on attempting to repeat it with kerosene other than that obtained from Mr. Phillips the experiment was a failure (Q484). This was thoroughly tested with kerosene from eight different sources with the same result. Mr. Higgins then found that none of these kerosenes contained any soluble frothing agent and that Mr. Phillips' kerosene specimen did contain a soluble frothing agent which gave indications of being the soluble part of pine oil (*idem;* p. 4612,

Q449). This was also true of a larger specimen of kerosene obtained from the appellant (Q450). Mr. Higgins then repeated the Phillips experiment in court with ordinary commercial kerosene, and wholly failed to obtain the result exhibited and photographed by Mr. Phillips, the results being metallurgically useless, with the bulk of the oil and the bulk of the mineral at the bottom of the vessel (Qs487-490).

Dr. McIlhiney also examined these specimens of kerosene, and additionally the specimen supplied by Mr. Dosenbach as that used in his experiment with 25% of kerosene said to represent the Kirby patent, and he found a soluble frothing agent in each of them, rather indeterminate in character, but suggesting pine oil or wood product (R., pp. 2695, 2696, Qs62-67).

Mr. Higgins verified this after having failed to produce any metallurgical result with the use of ordinary kerosene, by further adding to the pulp in the machine a minute amount of pine oil in the proportion of one-tenth of one per cent. and reagitating, and thereby reproduced the result that Mr. Phillips had produced, exhibited and photographed (p. 4620, Qs490-492).

By way of suggestion of the possibility of such a contamination as was found in this kerosene oil Mr. Dosenbach had previously testified that at the Butte & Superior plant they used their storage tanks successively for different oils without cleaning them out in the interim (Vol. 7, pp. 3890, 3891, XQs149-151) and of course it was only necessary to put the kerosene in a tank that had formerly contained pine oil, and nature did the rest. Possibly also careful examination and selection from

hundreds or thousands of specimens of kerosene oil may result in the discovery of a specimen of kerosene oil contaminated with a soluble frothing agent, and therefore capable of producing what Messrs. Phillips and Dosenbach produced and exhibited to the court, which was in fact a floating aerated paste, the oil in the paste carrying the mineral, and the air bubbles inflating and lightening the paste like the pores of a sponge but not attached to the metal, because air bubbles in oil will not attach metal to itself however finely ground the metal may be.

Following this exposure Dr. Sadtler testified to elaborate investigations of the kerosene used in appellant's experiments, in place of the simple experiment of dissolving out the soluble frothing agent with water, and as a result of his elaborations obtained a separated portion which gave a slight woody odor (pp. 4785-4790), thereby confirming Mr. Higgins' and Dr. McIlhiney's determinations.

It is therefore a proved fact in the case that kerosene oil will not produce a froth even under conditions of terrific agitation which Kirby never dreamed of, and that Kirby's minimum proportion of 25% of oil, or 500 lbs. to the ton of ore, even under conditions of terrific agitation, will not produce an inflated paste or magma carrying part of the metalliferous mineral, unless the kerosene is contaminated with a soluble frothing agent.

But these experiments had nothing to do with Kirby's actual disclosure. Kirby shows and describes an elaborate apparatus, and this appellees constructed in exact accordance with Kirby's drawings (Higgins, Vol. 8, pp.

4494, 4495, Qs150-152). In that apparatus Mr. Higgins carried out the Kirby process with the Kirby ore, ore from the Rossland mine (Qs154-156), using the oil mixture of Kirby's example said to give the exact adhesive preference for that ore, this mixture being 95% of kerosene with 5% of semi-solid petroleum residuum (Q157), and using Kirby's minimum proportion of 25% of oil (Qs158, 159). This ore was crushed to 80 mesh, although undoubtedly Kirby used coarser crushing (p. 4503, Qs195, 196), but the finer crushing helped flotation. Acid was used because it improves the result and is suggested by Kirby (Qs201-204). Streams of oil and streams of air were flowed into the separating tank through the slowly moving agitator as described by Kirby (Qs206-208). The agitator in the mixing tank was rotated at a speed of 188 revolutions per minute (Q209) and in the separating tank at a speed of 30 revolutions per minute (Q210). Baffles were provided in the mixing tank, although not described by Kirby, because otherwise water would overflow from the vessel during mixing (Qs211-213). The result of the operation was a thin layer of oil with mineral carried chiefly in the lower part of this layer and in fact at the oil-water interface, as described by Kirby (R., p. 4507, Q215). A peculiar phenomenon, described by Mr. Higgins as a crumpled up oil-water interface, resulted from the weight of the metalliferous particles and the disturbance caused by the passage of air through the pulp. This result was exhibited by pouring the overflow into a bottle, and it was seen that there was no mineral in the oil except at the interface (p. 4509, Q224 et seq.).

This was the Kirby result, not in any degree resembling a froth.

It is of interest that the experiment producing a crumpled up oil and water interface was first performed by Professor Beach, demonstrating the greatly increased viscosity at such an interface and that the presence of mineral particles at that interface added to that viscosity (Vol. 6, pp. 3060-3063, Qs29-35), and Mr. Higgins referred to that experiment (Vol. 8, p. 510, Qs232, 233). This scientific fact, demonstrated and confirmed by appellant's scientific experts, explains the possibility of carrying on the Kirby process with a thin oil. With Elmore's thick oil the viscosity of the oil holds the metal within the oil layer, although it tends to settle therein. But with Kirby's thin oil nothing but the increased viscosity of the interface prevents the metal from sinking to the bottom of the pulp, and the presence of metal there adds to the viscosity of the interface. As Kirby says in his specification:

> "The floating concentrates are carried mainly at the lower surface of the hydrocarbon layer, where it is in contact with the water" (Vol. 3, p. 2163; Spec., p. 3, lines 55-58),

and the fact appears to be that all of the metal that Kirby succeeds in floating off is carried substantially at this oil-water interface. The recovery was not encouraging, being 36.4% (Vol. 9, p. 5562), but the process was a failure anyway, and the reason for this is quite obvious.

Mr. Higgins explains the Kirby patents in connection with the experiment above referred to (Vol. 8, p. 4492, et seq.).

Plaintiff's reproduction of the Kirby apparatus was made after the argument in this court of the Hyde case. The Kirby ore was not available or used in the Hyde case. A full understanding of the Kirby phenomena was not attained in the Hyde case. The secret cause of the production of an aerated oily magma by terrific agitation with 25% of oil was wholly unknown to the appellees when appellant's experimenters for the first time exhibited to the appellees at the argument in this court the experiment alleged to represent the Kirby disclosure. Indeed, the fact that such a result could be produced was unknown to them. In the Hyde case there was no trial in open court. Dr. Byrnes had testified that he had obtained a froth with 25% of oil (Vol. 4, pp. 1523, 1524), but appellees' experts were unable to reproduce it (Vol. 2, pp. 622, 624). Its production in this court was a complete surprise to the appellees and the mystery was not solved until the trial in open court of the present suit.

The reproduced Kirby apparatus, with the Kirby ore, was first used in evidence in the trial of the Miami case. At the argument of the Hyde case in the Supreme Court, upon the statement by plaintiff's counsel as to the condition of the record, and with the consent of the Justices to showing an experiment not described in the record, the Kirby demonstration of the Miami suit was repeated in the Kirby apparatus, with the Kirby ore.

CALIFORNIA JOURNAL OF TECHNOLOGY.

The article first gives a brief outline of the Elmore process "as it is in actual operation" (p. 5036).

An illustration is given of a large scale Elmore plant containing three agitating vessels and separating vessels (p. 5036), and this is described, and it is said that

> "usually about a ton of oil is kept in operation for each ton of ore, but the losses of oil are small, the recovered oil being used over and over again" (p. 5039).

The oil described is "a heavy residuum of consistency of ordinary cylinder oil" (p. 5038). This is the Elmore oil, petroleum residuum, an inert oil in the process in suit, not a frothing oil (Higgins, Vol. 8, pp. 4740, 4741, Q54). The method of recovering this oil from the concentrates by centrifugal separation is then described.

This is followed by a description entitled "Laboratory Methods" and here we have the first reference to the use of an agitation more violent, and an amount of oil much smaller, than that which characterizes the Elmore process. It is said

> "the charge may be agitated very gently, the oil being kept in a single lake and broken up as little as possible, consistent with a thorough contact of pulp and oil; or the charge may be agitated so violently as to dash *the oil* up into a foam or *froth full of air bubbles*" (p. 5040).

This latter was the new contribution of the students resulting in the production of a floating mass of oil full of air bubbles—an air-distended or spongy magma.

Later, under the same heading, this method of more violent agitation is again described as accomplished

> "by violently shaking the tube, thus producing the foam effect, or at least shattering *the oil into small globules*" (p. 5041).

Then follows a description of the floating off of the oil carrying the concentrate, the mineral laden oil, and this is applied as to three methods of agitation, the first and second being the gentle agitation of Elmore producing mineral laden oil without bubbles in it, or as the students well name it, the "lake effect," and the third being the violent agitation or what they call the "foam effect." Further it is said as to the product of all three methods of agitation:

> "The *mineral laden oil* is then heated and treated in the cylindrical separator as above described" (p. 4042).

Thus, without any question, whether the agitation is gentle or violent and the result the "lake effect," or "the foam effect," *mineral laden oil* is treated in the cylindrical separator or centrifugal to recover as much oil as possible; and also, as is stated in the preceding description, the recovered oil is used over and over again" (p. 5039).

The advantages of an acid solution are then stated as (1) chemical action in dissolving oxide coatings, (2) increasing the specific gravity of the solution and thereby adding to the buoyant effect of the oil, and (3) particularly aiding the "foam effect" by generating gases, it being stated the "foam effect" is

> "due to the generation of certain gases" (p. 5042).

This latter is not further explained, but all these advantages suggest the use of a very considerable amount of acid. No details are given, however, of any definite experiments with definite amounts of acid, or of the

production of the "foam effect" by the use of acid or acidified water.

The advantage of the salt solution is then described, that by increasing the specific gravity of the water it multiplies the difference in gravity between the water and oil by three, thus giving the oil

> "a carrying capacity * * * threefold greater than with water alone" (p. 5042).

It is also said that the salt solution aids in producing the "foam effect," which they probably ascribed to its inherent tendency to foam (although it is not a mineral frothing agent) (Higgins, Vol. 8, p. 4524, Qs302, 303).

Then comes the heading "Tests—Molybdenite Ore" (p. 5044). Here it is stated that the ore was of low grade with values fairly well disseminated and that the samples were crushed to 20, 30 and 40 mesh and treated in percolating tubes. Percolating tubes are glass laboratory test tubes with stoppered bottom openings for draining their contents. Then follows a table giving details and results.

Experiment No. 1 is an Elmore experiment with 2,400 grammes of oil to 2,000 grammes of ore. The ore was crushed to 20 mesh, there were four treatments (the oil was extracted and used over again three times) and the recovery 6.3% was ridiculous. The text following says that this shows that the oil required

> "finer crushing to liberate the sulphide" (p. 5042).

Finer crushing was therefore resorted to, and experiment No. 2 was made with a sample crushed to 30 mesh. Here the recovery was much better, 67.6%.

Then experiment No. 3 was with the finest crushing, 40 mesh, and here the recovery was about the same, but the grade of concentrate fell off to the lowest in all of the experiments 17.4% of molybdenum sulphide. The comment on this is:

> "That although the finer crushing has freed the MoS_2 from the gangue, at the same time it has produced a larger percentage of fine gangue which, becoming mechanically occluded in the oil, gives a low grade concentrate" (p. 5044).

Thus these students rediscovered the well known fact that the Elmore process cannot treat slimes, and that 40 mesh crushing was too fine (it contained too much slime) and so they went back to 30 mesh and all of the other experiments in this table were with ore crushed to 30 mesh.

Experiment No. 4 is the first "foam effect" experiment, and in it they boldly cut down the oil percentage to 2.1%. Evidently they did not succeed in extracting enough oil for repeating the operation, as there was but one treatment, although their concentrate contained 75% of oil which would make a very good thin paste or magma (Higgins, Vol. 8, p. 4522, Q293; p. 4524, Q301). The grade of concentrate was poor, 32.4% of molybdenum sulphide, and the recovery was hopeless, 43.5%. The experiments were made "in a salt solution" (p. 5045) and they therefore had the assistance of increase of oil buoyancy and of the natural tendency

of salt water to foam. What they obtained in this and the other foam experiments they describe later as follows:

> "This throws *the oil* into a froth, which is heavily charged with air or other gases. This gas, of course, gives a greatly increased buoyant force" (p. 5052).

In experiment No. 5 they more than doubled the amount of oil, using 5.3%, and here there were two treatments, as would be expected with the increased amount of oil. The recovery was only 47% and the grade the same, and thus the improvement was slight from experiment No. 2, but it was some improvement and therefore in experiment No. 6 they nearly doubled the oil, using 8.9% and three treatments, and secured a recovery of 75%. This is the only experiment upon which they favorably comment. They say:

> "In experiment No. 6 only about ten cc. of oil was used for one hundred grammes of ore. This gave an extraction of 75%, with concentrates running 32.4% MoS_2" (p. 5045).

But although the recovery was possibly a reasonable recovery, it is truthfully said that the concentrates were not marketable, and therefore they were reconcentrated, and in these reconcentration tests (7, 8 and 9 of the table) we have the only reference to the use of sulphuric acid, and it was evidently here used without further addition of oil in an agitation lasting fifteen minutes to cut out the gangue from the heavily oiled concentrate, and then followed by the addition of a further quantity of oil, apparently the 3% of the table, and a further agitation to float a concentrate of higher grade.

The remainder of the article deals with the Elmore lake effect, and much is said about tests of copper ores and gold ores, and it is very evident that if they had found that the "foam effect," with its economy of oil, only 10cc. of oil for 100 grammes of ore, 8.9%, 178 lbs. of oil to the ton of ore, instead of 2,000 lbs. of oil to the ton of ore, could have been successfully used for copper or gold ores, the article would have described it. The conclusion moreover expresses the views of the students as to what they had discovered. They say:

> "The foam effect is best adapted for light, flaky minerals, such as molybdenite" (p. 5052).

Again they say that what happens is that the agitation

> "throws the *oil* into a froth, which is heavily charged with air or other gases. This gas, of course, gives a greatly increased buoyant force. The *oil* in this condition assumes a certain load of mineral and holds it in a very stable condition" (p. 5052).

These interesting experiments did not add anything to the knowledge of the art that was of the slightest value towards the discovery of the process in suit. In fact they point away from it. The procedure which they carried on at 2.1% of oil was a failure, at 5.3% of oil was but slightly improved and also a failure, and at 8.9% of oil was alone worthy of consideration by metallurgists. The further investigations which their experiments suggest may be summed up as follows: (1) the use of oil at 8.9% and the avoidance of smaller proportions of oil; (2) the use of the Elmore oil, which is not a frothing oil and is inert in the process in suit;

(3) the use of salt solutions to increase, in fact multiply by three, the buoyancy of the oil; (4) crushing only to 30 mesh and the avoidance of slimes; (5) limitation of the foam effect to light, flaky metallic minerals such as molybdenite as contrasted with copper and gold. This leads far away from the invention in suit.

Mr. Higgins' testimony as to this publication explains the principal points above stated (Vol. 8, pp. 4521-4526, Qs291-313; pp. 4740, 4741, Q54). He says in part:

> "These experiments show in the first place such low extraction and such low values in concentrates that they are utterly worthless as metallurgical operations" (Vol. 8. p. 4522, Q292).

Mr. Higgins also says as to the three "foam effect" experiments 4, 5 and 6 of the table:

> "Q301. What is your understanding of what happens in these operations, experiments 4, 5 and 6?
>
> A. Well with that quantity of oil to that quantity of concentrate there was a minimum of 75% of oil. That would make quite a nice thin paste, which has been described as a magma, and that magma would become distended with air bubbles introduced during agitation, and what we would have in the percolating tube would be the flotation of a magma distended with air bubbles" (Vol. 8, p. 4524).

Magma. The term "magma", which Froment so aptly uses to describe his float, is the appropriate descriptive word for the character of float produced both by the Froment patents and by the California Journal of Technology in its so-called "foam effect". The students describe their float as mineral-laden oil heavily charged with air or other gases, and say that it is the oil in the float which carries the mineral—"assumes a certain load

of minerals and holds it in a very stable condition," etc. A magma is a paste, and the kind of magma produced in these operations is an inflated paste carrying metallic particles. It is like a cork lightened by the pores in it so that it has greater buoyancy. It is like a mass of soap made spongy by air bubbles, such as the ordinary floating soap of commerce and such as described in the Hyde Record under the heading "Flotant Soaps" (Vol. 4, p. 1821). Specks of metal distributed through such a soap would correspond to the metallic particles in a mineral-laden magma. In such a magma the metallic particles would be distributed through the viscous oily mass and not attached to the air bubbles at all, for air in oil has no attraction for metallic particles—an air bubble in oil will not pick up even the most minute particle of metallic dust (Vol. 8, pp. 4566, 4568; pp. 4225-4229, Qs44-47). The only function of an air bubble in a floating magma is to lighten the mass of oil and add to its buoyancy, so that a much smaller amount of oil than Elmore required will nevertheless float a fair amount of metal. Such a float resembles a mineral froth in external appearance, and in a small glass vessel it looks quite like a froth, but it is essentially different in structure and is useless in metallurgy. It never got beyond the Froment laboratory test tube or the California students' laboratory percolating tubes.

The Supreme Court of the United States dismissed the Froment process as "little more than a laboratory experiment" (Opinion, p. 4) and would certainly have dismissed this disclosure as *nothing more than a laboratory experiment,* had it been before them.

Appellant in only one instance repeated an experiment resembling that described by the students, with 5.3% of the students oil, a heavy petroleum, non-frothing. This experiment, with saturated salt solution (Vol. 5, p. 326 et seq.), appeared to produce what the students described, a floating mass of oil carrying metalliferous particles and heavily charged with air, in other words a magma. What the recovery was no one knows, but if it was as good as the students obtained, 53% of the metal was in the tailings. Appellant should have followed the instructions of the students and increased the amount of oil to 8.9%, 178 pounds to the ton of ore.

The other experiments of appellant alleged to show what these students had disclosed, clearly failed to do so. The other test-tube experiment with sulphuric acid and water heated to 40° Centigrade (104° Fahr.) was clearly unjustified. Sulphuric acid is not described as used in primary separation, but only for washing the gangue out of the concentrates, and whether it is present or not in the final reconcentration does not clearly appear. However this may be, heating was clearly unjustified. The students were dealing primarily with the Elmore process, where heating thinned the oil and caused it to drop the metal, and there is not the faintest suggestion of the discovery made known in the patent in suit, that heat assists in the formation of a mineral froth. The advantage of heat in mineral froth formation is admitted by Professor Taggart (Vol. 6, p. 2967, Q49). The students avoided heat in their work of concentration because Elmore taught them to avoid it. They only used it after the concentration was com-

pleted and the concentrate separated from the gangue, to assist in separating the oil from the concentrate; and in such use of heat the heating of the oil is properly said

"to thin it and overcome its viscosity" (p. 5038).

Appellant's Model Pyramid Machine. These criticisms apply to all of these experiments, except that carried on in defendant's exhibit 226, model pyramid machine, and those experiments carried on in the modern Janney machines on a large scale and said to represent, indifferently, Everson, Froment, Kirby and the California Journal of Technology. The latter will be considered later. The model machine experiment was carried on with 2.1% of oil and was therefore prominently put forward as a repetition of what the students did.

It is only necessary, however, to consider the oil constituent to dismiss this experiment as in no way related to what the California students did. Appellant used its wonderful oil mixture (the product of years of study and research for means to evade the patent in suit), consisting of 70% of the students' oil, fuel oil or petroleum residuum, 12% of kerosene to thin this oil and thus impair its utility in the students' experiments, and 18% of pine oil, an essential oil, partly insoluble active frothing agent and partly soluble active frothing agent. Pine oil was therefore present in the proportion of .378% of the ore, part oily frothing agent and part soluble frothing agent. The other oils, fuel oil and kerosene, were inert. The only oily frothing agent present was the insoluble part of the pine oil.

This was present in critical proportions amounting to a small fraction of one per cent. of the ore. The presence of the soluble frothing agent made it possible to dump the inert oils into the pulp, 1.47% of fuel oil on the ore and .254% of kerosene, without spoiling the air-froth flotation process, and therefore the process of the patent in suit and the process of the solution patent (soluble frothing agent patent No. 962,678) could be carried on conjointly with impaired but not impossible results.

The procedure resembled that carried on in appellant's mill. The same ore was used with its abnormally large oil-absorbing clay gangue constituent. Cold water was used to solidify the grease constituent. The agitation, although not that of a Janney machine, was abnormally intense, with a speed of 1988 revolutions per minute and a peripheral speed of 1561 peripheral feet per minute (Dosenbach, Vol. 8, p. 3904, XQ188).

Mr. Higgins briefly states the reasons above given for his conclusion that the process was not that disclosed by the California students and was a joint use of the process of the patent in suit and of the solution patent, impaired but not destroyed by excess oil (Vol. 9, p. 4780, RDQs240, 241; pp. 4773, 4774, XQs198-207).

Judge Bradford gave careful consideration to the disclosures of the California Journal (237 Fed. 623). The Third Circuit Court of Appeals merely dismissed it as an example of the use of air

> "to supplement the natural buoyancy of oil and to assist the oil-coated particles to the surface" (Opinion, p. 6).

Judge Bourquin below says:

> "The only new publication is the California Journal of Technology detailing a suggestive but rather misleading and abandoned experiment, sufficiently referred to and disposed of in the Miami suit" (Vol. 1, p. clxxxiv).

APPELLANT'S LARGE SCALE OPERATIONS OF NO PROBATIVE FORCE FOR ANTICIPATION.

All of the deceptive laboratory experiments misrepresenting the prior art made in behalf of the defendant in the Hyde suit having failed to convince the Supreme Court of the United States, and similar experiments in the Miami suit having similarly failed in the District Court of Delaware and the Third Circuit Court of Appeals, the present appellant has resorted to new tactics and we now have large scale operations and experiments carried on in the modern Janney machine in the light of all knowledge which the process in suit has given to the world and with agitation of an intensity far exceeding even appellees' procedure, and these operations and experiments were put forward in the evidence as representing, indifferently, Everson, Froment, Kirby and the California Journal of Technology.

The allied companies appear to have actually operated small portions of their plants over a period of some months with a definite and persistent effort to use twenty pounds or more of oil to the ton of ore. The remarkable fact about these operations is that they approach so close to this artificial border line—indeed, many of them fail to overstep it. It is a patent fact that, however much may be at stake, no mill will carry

on the flotation process in regular operations with an oil proportion exceeding one per cent. by any but a very small fraction of one per cent. and that in many instances these operations cannot be carried on at all, notwithstanding the presence of inert oils, with oil proportions exceeding one per cent. This is notably true as to the slimes flotation plants at the Utah, both mills, Chino and Ray, of many times the capacity of the small retreatment plants in which efforts were made to maintain daily operations with twenty pounds or more of oil.

Another remarkable feature about all of these operations, whether regular operations or brief experiments, is that in every instance a soluble frothing agent is present, dissolved in the pulp, whether included in the oil feed or dissolved in the circuit water from former operations. It is the presence of a soluble frothing agent which permits wasteful use of an inert oil without destroying froth flotation.

The genesis of these operations is obviously not to be found in the prior art. Even Dr. Sadtler admits that they were made with improvements and knowledge and experience which followed the introduction of the process in suit into this country, as follows:

> "XQ589. With improvements and knowledge and experience which have followed the introduction into this country of the process of the patent in suit. Isn't that right?
>
> A. Yes; there has been an immense mass of experimental work done in all the mills, which contribute to it" (Vol. 7, pp. 3791-3792).

The genesis of these operations is to be found in the patent in suit, but the further knowledge given to the

world by the soluble frothing agents patent No. 962,678 on June 28, 1910, was necessary to the carrying on of these operations, since they all involve the use of soluble frothing agents.

It is interesting that even Mr. Dosenbach does not ascribe his knowledge of the possibility of using larger quantities of oil in air-froth flotation to the prior art, but ascribes it to the fact that in the Summer of 1913, in testing the process of the patent in suit for infringing operations at the Utah Copper Company, he stumbled accidentally upon the fact that with certain coal tars and coal tar derivatives it was necessary to use large quantities to obtain flotation results (Vol. 6, p. 3397, XQs361-364). Coal tar contains tar and oil and the soluble frothing agent phenol. The oil and the phenol are excellent mineral frothing agents. To this it was only necessary to add the knowledge that heavy petroleums can, under carefully studied conditions, be mixed with coal tars or phenols so as not to destroy mineral froth formation, and that a sufficiently impure coal tar may sometimes be used alone, and we have the explanation of every large scale mill operation, regular or experimental, proved in behalf of the appellant wherein one per cent. or more of a material called oil is used.

The use of tar, grease and waxy substances is exceedingly convenient when the object is to increase the amount of useless material used under the name of oil. Examples of this are the use of a solid mineral wax Gilsonite, which looks like asphaltum, and contains only 56% of oil, as testified to by Mr. Thomas A. Janney (Vol. 5, pages 2606-2607, XQs310-315), and the presence

in the appellant's and other heavy oil mixtures of grease which becomes semi-solid in the cold water used.

A consideration of the details of the many oil-wasting operations testified to in behalf of the appellant is deemed here unnecessary. In so far as they were the actual operations of the appellant they have been considered under the heading of "Infringement". The operations of the other infringers so far as proved have been considered under their respective sub-headings under the general heading "Commercial Use of the Invention—Infringers". In only one instance were these operations other than those of appellant performed in the presence of appellees' representatives, and that operation will now be considered.

Utah Copper Co.—Magna Plant—Oil-Wasting Experiment. During the trial, on April 22, 1917, an operation was performed in the presence of appellees' representatives wherein 21.8 pounds of oil (1.09%) were used per ton of material treated.

This operation is described by Professor Fulton and Messrs. Chapman and Greninger, appellees' representatives.

There were seventeen Janney machines in series and in each machine an agitating compartment and two spitzkastens on opposite sides of the agitating compartment. From the spitzkastens floating material was discharged, while the tailings, deprived of the material which overflowed from the spitzkastens passed on to the next machine (see flow sheet, Plaintiff's Exhibit 245, Vol. 9, p. 5347). As Mr. Conrads, metallurgical engineer of this plant admitted, the result was that

each spitzkasten removed a large amount of oil and the oil proportion was stepped down from machine to machine (Vol. 5, pp. 2709, 2714, XQs381, 415).

The double spitzkastens of each machine were practically duplicates, each receiving half of the agitated product of the admittedly "terrific agitation" (Conrads, Vol. 5, p. 2709, XQ387) in the agitating compartment of the machine. The seventeen spitzkastens arranged in a row at one side of the machines may therefore be taken as representative of the other seventeen spitzkastens on the opposite sides of the machines, and this was done in the work of sampling, which was confined to one of the rows of spitzkastens.

In the exhibited operation the first spitzkasten was used as an oil collector and remover and thereafter the process proceeded without a troublesome excess of oil. The float in this first spitzkasten contained about 412.31 pounds of oil per ton of ore (Deft's Ex. 251, Vol. 9, p. 5358) (524.80 lbs. per ton of ore), 25.97% according to appellant's analyses and 26.24% according to appellees' analyses (Vol. 8, p. 4686 Qs29-30). This float, as described by Professor Fulton, was machanically divided on a plaque into (1) a floating oily emulsion carrying traces of mineral, (2) oil-air bubbles carrying a little mineral, and (3) the ordinary agitation froth, but in small amounts (Vol. 8, p. 4405, Qs19-20). Mr. Chapman analyzed it on the plaque as containing (1) a collection of oil globules badly broken up with air, (2) a sunken oily slime, (3) oil globules easily separable from the settled slime, and this slime was like the sunken concentrate which could be vanned from the

result of the agitation froth process (p. 4427, Q6). Mr. Greninger says that it separated into two distinct products, one being an oily emulsion containing oil globules and little mineral, and the other the mineral froth (p. 4334, Q50). Mr. Chapman says that this first spitzkasten was really used for oil concentration (p. 4426). This oily float overflowed only at intervals, evidently to give the impression that the spitzkasten was out of use. Beyond this in the second and succeeding spitzkastens an air-froth carrying abundant mineral was discharged, and without question in 16 of the 17 machines the process of the patent in suit was being carried on in the presence of an amount of oil much less than 1% of the ore.

Professor Fulton's description of these operations (pp. 4403-4407), further added to on cross-examination (p. 4415, XQ62; p. 4420, XQ90). Mr. Chapman's description (pp. 4424-4430; pp. 4447, 4448, Qs81-86), also further added to on cross-examination (pp. 4449, 4450), and Mr. Greninger's description of these operations (pp. 4332-4342), which was also added to on cross-examination (pp. 4344-4348) are quite full and complete. Mr. Chapman testified as follows:

> "Q81. Having before you all of these determinations, and having seen the plant in operation, I wish you would say what process was being carried on at the Utah Copper Company on the occasion of your visit.
>
> "A. The process employed at the time of our visit was undoubtedly that of the agitation froth process. The incident of that oil removal at the first spitzbox, not being one of ore concentration, I would exclude that one box; but the rest of the plant was undoubtedly the agitation froth process" pp. 4447, 4448).

Mr. Greninger testified that he considered the process which he there saw substantially the same as the standard Minerals Separation process with which he was familiar (p. 4340, Qs83, 84).

The grease chilling phenomenon of the Butte & Superior process was here repeated, and a substance known as Calura was used in large quantities and undoubtedly assisted in preventing destruction of the process by the excess of oil.

It is impossible to consider this operation as representative of anything in the art prior to the process in suit. It merely shows what the ingenuity of an infringer may do when he wishes to use the process in suit and tries to mask it.

MOVING PICTURES.

These pictures were prepared and exhibited by Dr. William Mason Grosvenor, and the films are in evidence as Plaintiff's Exhibit 227. He testifies as to the care which he took to assure that the experiments represented were veritable experiments by testing them over and over again, and were accurately portrayed in the pictures (Vol. 8, pp. 4706-4707, Qs1, 2).

The explanation of these pictures (Vol. 8, pp. 4538-4591) is full and complete. Briefly they show phenomena of actual occurrence and capable of this kind of picturing, which to some extent exhibit the operation of the forces at work in air-froth flotation, and they conclude with pictures actually showing the interior structures of an air-froth and an oil-froth or magma.

> "1. The strong attachment of unoiled or deoiled mineral particles for air bubbles. Four sizes—Galena—6 milligrams, 15 milligrams, 20 milligrams, 40 milligrams" (p. 4538).

Clean air bubbles immersed in pure water and held down by inverted cup shaped bubble holders are applied to these particles and the strength or weakness of attachment of the particles and these captive bubbles is exhibited by manipulation. All except the heaviest (40 mg.) particle have been oiled and then deoiled, under water, by prolonged bubbling of air, to a film comparable with the adsorption film.

The 6 mg. particle is the heaviest galena particle which can be lifted by a captive air bubble gently manipulated and coated with oil to Cattermole proportions (8% on mineral). Particles thus coated will stick together by reason of their oil coatings—may be agglomerated into granules. This particle is seen to be instantly lifted. A very vigorous jerk is necessary to detach it from the bubble.

The 15 mg. particle is the maximum galena particle that can be lifted by the captive bubble with the utmost care if the oil layer is considerably reduced below this Cattermole thickness. This particle lifts instantly but is seen to be more easily detached than the 6 mg. particle.

The 20 mg. particle is the maximum that can be lifted by a free moving bubble when the oil layer is about one one-hundred-thousandth of an inch thick. It lifts readily but a still less vigorous movement detaches it.

The 40 mg. particle is the maximum that can be lifted when clean or thoroughly deoiled. The lift is at first un-

certain because of slight contamination of the bubble, and the particle is easily detached.

> "2. Oil globule fails to pick up even light metallic particles. Air bubble picks up similar particles many times as heavy" (p. 4541).

A large oil globule, made in and manipulated by the bubble holder under water attaches itself to and then breaks away from and fails to lift a galena particle weighing 5 mg. and an aluminum punching weighing 16.7 mg. A clean air bubble, similarly manipulated, picks up a galena particle weighing 30 mg. and an aluminum punching weighing 54 mg. The weakness of oil attachment to mineral in water as contrasted with air attachment to mineral in water is thus clearly shown.

> "3. Air bubbles do not readily attach themselves to oil globules and have slight if any lifting power when attached" (p. 4545).

A galena cube at the bottom of the vessel weighing 40 mg. has placed upon it a dome of oil. A captive air bubble is brought down in repeated contact with it. The oil flashes over the inner surface of the bubble and forms a lens at the bottom of the bubble, but stretches out in a neck and breaks away as the bubble rises and the particle is not lifted. The air bubble robs it of part of its oil. The lifting force is the surface tension of the oil-water interface and is too weak to lift the particle.

> "4. Air bubbles do not attach themselves to metallic particles coated with sufficient oil to produce adhesiveness (p. 4547).
>
> "5. Air bubbles do not attach themselves to metallic particles coated with sufficient oil (cottonseed) to produce adhesiveness" (p. 4548).

Here we have a clean aluminum disc weighing 50 milligrams and two aluminum discs weighing 25 milligrams each and oiled to Cattermole proportions, that is with a layer which, with material ground to 80 mesh, would require between 4% and 8% of oil on the weight of the mineral and which produces a layer of oil about 30 one-hundred-thousandths of an inch thick. The captive air bubble lifts the heavy and clean particle and successively fails to lift the two lighter oiled particles. One oiled particle is lifted by tweezers and placed upon the other oiled particle and adheres to it so strongly that it is shown to lift it. Thus it is demonstrated that there is sufficient oil on the oiled particles to serve as a medium of attachment to other particles. The oil is the attaching medium. This is also true when air bubbles are applied to particles oiled in at least Cattermole proportions. The air bubbles do not attach themselves to the metallic particles, but the attachment is of the kind shown in the preceding pictures, experiment 3, wherein the oil flashed over and coated the inside of the bubble, and the attachment was that of the oil lining of the bubble to the oil coating of the particle, a weak oil neck attachment of little strength.

> "6. Air bubbles do not attach themselves to metallic particles coated with sufficient oil (oleic acid) to produce adhesiveness" (p. 4550).

This repeats the last experiment, with a change from cottonseed oil to oleic acid.

> "7. The unlimited carrying power of air bubbles as compared with oil.
>
> "Air bubbles in water lift pieces of aluminum one inch in diameter, .05 inch thick" (p. 4550).

In this experiment a truly giant captive air bubble is held down by a large bubble holder and a magnified example is given of the direct attachment of a clean piece of metal for an air bubble. This experiment was performed in court (Vol. 7, pp. 4184-4185; pp. 4194-4195). This particle weighs 1⅞ grams, 1875 milligrams (Vol. 8, p. 4551), but the increase in the size of the air bubble made it possible to lift it, and this shows that when air bubble and particle are both greatly increased in size, we may actually see the operation and measure the lifting forces, even though in the actual operation of the process both the air bubbles and the metal particles are so minute as to be scarcely visible and the water so clouded by the gangue that very little can be seen. In the court experiment at first this large aluminum disc was not lifted, the laboratory conditions of cleanliness not being present (p. 4185). The particle was washed and thereafter was lifted (p. 4194), and it was clearly seen that the particle and bubble were directly attached and the clean metal surface, from which the water had retreated, exposed at the inner face of the bubble, although the particle being not quite clean there were a few little globules of water lying on the surface of the particle. In the pictured experiment laboratory conditions of cleanliness were observed and the fingers did not touch the disc. The giant bubble lifts the large disc, and it is seen to be firmly held, although swaying from side to side and bumping against the side of the bubble holder.

> "8. Same aluminum piece suspended by a fine thread lowered through water to show pliability of the thread" (p. 4553).

The title explains the pictures, wherein the large disc is lowered through the water and allowed to rest on supports at the bottom of the vessel, whereupon the threads sag, showing their pliability.

> "9. Same aluminum piece lowered through oil layer on water showing absence of oil-carrying power" (p. 4553).

The disc is lowered through a layer of oil, which fails to carry it, although it attaches itself to the particle, and draws out into a neck, giving an excellent illustration of the operation of the necking off of the body of oil as it fails to carry a metal particle.

> "10. When air bubbles lifting metallic particles meet the thinnest possible oil layer they drop the particles" (p. 4556).

Here we have to the left a galena particle weighing 29 milligrams, in the middle a number of small galena particles of about 40 mesh, and to the right a punched aluminum disc weighing 54 milligrams. These are successively raised by clean bubbles and carried to the oil layer on the surface of the water, which is the thinnest layer it is possible to obtain. The moment the galena particle reaches the oil, its attraction for the air bubble is so diminished that it sinks. The 40-mesh particles are retained for a time by the oil layer, but sink in a mass like an inverted waterspout, illustrating overloading, just at the end of the experiment. The aluminum disc sinks as soon as it reaches the oil.

Microscopic examination of the pictures shows that the large galena particle sank in one-fourth of a second after the bubble had passed through the oil layer. A few of the fine particles immediately dropped, too quick-

ly to be seen, and the others gather in a clot and hang for a few seconds. The aluminum disc quickly slid down to the lowest point on the oil film and fell without interruption to the bottom of the cell.

> "11. Minute excess of oily mineral frothing agent causes air bubbles to drop metallic particles" (p. 4562).

Here a galena particle weighing 25 milligrams and an aluminum punching weighing 54 milligrams (each about one-half of the maximum lift) are successively lifted and suspended by captive air bubbles. A minute amount of oily frothing agent, three-tenths of a milligram, is then applied to the surface of each bubble. It flashes over the inner surface of the bubble, destroys the direct attachment of the bubble for the metal particle, and causes the metal particle to drop to the bottom of the vessel. Thus we see how oil acts as a robber of air bubbles and destroys the powerful direct attachment.

> "12. Air will not attach to mineral enveloped in oil. Finely ground mineral particles less than 200 mesh (.0029 inches, .005mg.) are touched with air bubbles in pine oil. No lift whatever" (p. 4566).

This experiment was also performed in court (pp. 4225-4229, Qs44-47), and is very important as demonstrating that, in a mass of oil, air bubbles have no attachment or lifting power whatsoever for metal particles, even the finest metallic dust. It and the preceding experiments explain how useless air bubbles become in an oil layer, such for example as Kirby's, even though they may assist the buoyancy of oil particles to rise into the oil layer. The moment the surface tension of an oil-water interface, weak though it is, is no longer

effective, and the metal particle is in a body of oil, all attraction of an air bubble and a metal particle is destroyed.

This experiment as pictured shows repeated applications of the air bubble to the fine metallic particles immersed in the oil without the faintest trace of attachment to the air bubble. Dr. Grosvenor also states that he has tested this with other oils and other minerals and it has given exactly the same result.

> "13. Magnified view of clean air bubble in pine oil. No mineral attached" (p. 4567).

This picture shows the illuminated under surface of the bubble of the previous pictures taken immediately after it was last withdrawn from contact with the metal, and that there is not a speck of dust upon its surface.

It may be noted here that Professor Beach theoretically determined that under the conditions of these pictures the air bubble would pick up the metal particles and that the metal particles would add to the viscosity of the oil-air interface, this wholly erroneous theoretical determination being based upon his contact angle theory (Vol. 6, pp. 3099-3101, XQs144-146). This conclusion he reached after drawing diagram 20 (Defendant's Exhibit No. 147, Vol. 9, p. 5163), which well illustrated the uselessness of such theoretical deductions as defendant's scientific experts presented.

> "14. De-oiling of the galena particles. Kerosene rapidly removed. Three sizes shown in pine oil and water, 6 mg., 16 mg. and 20 mg." (p. 4568).

Experiments of this nature were performed in court (Vol. 7, pp. 4188-4194) and they show how intense agi-

tation and aeration remove the oil from over-oiled metal particles. A stream of bubbles was played upon an immersed oiled particle and robbed the particle of its oil, and as the oil coating diminished the particle commenced to show activity, until finally the bubbles lifted the particle. In the court experiment the oil gathered on the surface of the water, and when the air bubbles lifted the particle it was re-oiled and had to again be de-oiled by air bubbles before the air bubbles could again lift it. The pictures well show de-oiling of the particles by the air bubbles and the increasing strong attachment for the air bubbles as the particles are de-oiled.

> "15, 16, 17, 18, 19. Magnified views of de-oiling 6 mg. particles from kerosene" (p. 4570).

The greatly magnified pictures well show the phenomena of the preceding experiment.

> "20. Agitation of water unmodified by a mineral frothing agent produces air bubbles which coalesce, rise and burst. Mineral frothing agents produce small and persistent air bubbles.
>
> "Unmodified water" (p. 4572).

Here it is observed that the moment the agitation is stopped the bubbles rise and disappear.

> "21. Magnified view of unmodified water" (p. 4573).

This experiment demonstrates how impossible air froth flotation is in pure water. The air is flowed into the water through a porous medium, alundum, with very fine pores, but the bubbles grow rapidly, coalescing with explosive violence, and the large bubbles are so weak that they do not even maintain spherical shape, but are extended horizontally into egg form. The rapidity of

coalescence was so great that the normal rate of moving pictures, about 16 per second, had to be changed to about 120 per second. These pictures were exhibited at about 12 per second, and thus it was possible by reason of the slowing down to see these operations of coalescence, or at least their results. Although these clean air bubbles have a strong attachment for metal particles, they would have about as much chance of remaining attached as a beetle of hanging on to a stick of exploding dynamite.

"22. Water modified by oleic acid" (p. 4576).

Here a minute amount of oleic acid has been added and the water modified thereby, and we see persistent minute bubbles capable of doing the work of froth flotation.

"23. Magnified view of water modified by oleic acid" (p. 4576).

Here we can see not only minute persistent air bubbles, but cloudy masses of bubbles so minute that they cannot be individually seen. The striking difference between these pictures and those of bubbles formed in unmodified water under the same conditions enables us to comprehend how the modifying action of oleic acid produces useful metal-carrying air bubbles.

"24. Water modified by pine oil" (p. 4578).

Here we have a mineral frothing agent, partly oily frothing agent and partly soluble frothing agent, and we see the persistent minute air bubbles and the cloudy effects of bubbles too small to be individually seen.

"25. Magnified view of water modified with pine oil" (p. 4578).

In this magnification we clearly see the typical smoky or forest fire effect of the extremely minute bubbles, as well as the persistence of those minute bubbles which are large enough to be seen as thus magnified.

"26. Kerosene oil not a frothing agent" (p. 4579).

Here first a minute amount, .05%, and then a larger amount, .49%, of kerosene was added to water. The bubbles rise quickly and burst, and the cloudiness is due only to emulsified oil—extremely minute oil globules—and not to air.

"27. Kerosene oil not aerating agent, but is itself emulsified" (p. 4580).

This is a view of the same emulsion after it has stood for an hour, and shows that the cloudiness is not due to fine air bubbles, but is due to oil emulsion, and these pictures well show the persistence of such an emulsion.

"28. Magnified view unmodified water in presence of kerosene oil" (p. 4580).

At first .05% of kerosene oil was added, then 5%. These magnified pictures clearly show large, quick-coalescing bubbles, just as in the case of pure water, and show how useless kerosene is as a mineral frothing agent.

"29. Pine oil excellent frothing agent with kerosene or alone" (p. 4581).

Here .1% of pine oil is added to the kerosene emulsion and now the agitation produces a wholly different result, fine and persistent bubbles being formed.

"30. Magnified view of water modified by pine oil in presence of kerosene" (p. 4581).

Here we see that the presence of the kerosene does not in any way interfere with the production of the fine clouds of bubbles or the forest fire effect as well as the persistent fine bubbles. The presence of the kerosene can hardly be said to modify this effect.

"31. Magnified view of water modified by pine oil in presence of kerosene and Jones fuel oil" (p. 4582).

Here we have substantially defendant's oil mixture, and the pine oil performs its modifying function just as it did alone, and just as it did in the presence of kerosene, the inert oils not having substantially changed the air bubble result.

"32. Water modified by phenol" (p. 4582).

This is the first set of pictures of a wholly soluble frothing agent. This extreme fineness of the air bubbles, producing cloud effects, is evident even in this not substantially magnified view.

"33. Magnified view of water modified by phenol" (p. 4582).

Here we have forest fire effect and persistent minute bubbles which characterize all modifying agents. The effect is much the same as with oleic acid, but there is a great improvement in the fineness of subdivision.

"34. Water modified by cresol" (p. 4583).

These pictures look quite the same as the unmagnified phenol pictures.

"35. Magnified view of water modified by cresol" (p. 4584).

These pictures look quite the same as the phenol magnified pictures, although there are recognizable differences, the smoke having a somewhat coarser granulation. The bubbles separately visible are minute and persistent.

"36. Water modified by amyl acetate" (p. 4584).

This is the soluble frothing agent of the specific example of the soluble frothing agent, patent No. 962,-678 and in this unmagnified view we have the same smoke effect as with the other soluble frothing agents.

"37. Magnified view of water modified by amyl acetate" (p. 4585).

The appearance of individual minute persistent bubbles and clouds of very fine bubbles is here quite the same as with phenol and cresol.

"38. Water modified by acetic acid" (p. 4585).

In this unmagnified view we have quite the same conditions as with the other soluble frothing agents. This substance, an excellent mineral frothing agent, is not an oil nor is it usually associated with oils and is most familiar as the dominating constituent of vinegar.

"39. Magnified view of water modified by acetic acid" (p. 4586).

Here we have the characteristic fine subdivision of the air and the ordinary characteristics of soluble frothing agents, with an excellent forest fire effect.

"40. Practical results. Air bubbles produced in modified water pick out metallic particles and reject gangue particles" (p. 4586).

Here the water is modified, containing .02% of cresol and .05% of sulphuric acid, and the effect of the captive bubble in picking up metallic particles and rejecting gangue particles is shown. The metallic particles are galena (lead sulphide), pyrite (iron sulphide) and blende (zinc sulphide). The non-metallic particles are quartz, feldspar and calcite, typical gangue. The metallic particles are much the heavier, and the larger sizes and surfaces of the gangue particles give the air bubble a better chance for attachment. The air bubbles seize upon the metallic particles one after another and lift them and are detached only by violent jerks. The gangue particles are not lifted at all.

"41. Oil froths" (p. 4588).

The pictures show an oil emulsion froth or magma made with about 16 or 17% of oil to ore (p. 4713, XQ14), and show the interior structure of this floating material by light transmitted directly through it. It is mainly a mass of oil with metallic particles entrapped in it, and air bubbles are also entrapped in the oil, and as the floating mass is gently pressed and shifted between glass plates, these air bubbles escape and at the end of the experiment a sufficient number of these air bubbles has escaped to increase the density of the floating mass just above that of water and so it sinks. This well represents practical conditions where absolute quiescence of the water surface is impossible and the air bubbles that would be entangled and held in such a mass of oil and metal in a glass jar will escape and so diminish the buoyancy of the mass that it will not continue to float. The amount of oil is insufficient to float

the entrapped metal by the buoyancy of the oil. The method of holding the metal particles is substantially the same as in an oil-buoyancy float.

The separate enlarged photographs of this film are in evidence as Plaintiffs' Exhibits 278-281 (0^1, 0^2, 0^3, 0^4, Vol. 9, pp. 5446-5449, but so poorly printed that the original photographs in evidence should be examined); the last showing the sinking mass now nearly deprived of air bubbles.

"42. Air froths" (p. 4590).

Here we have an air froth of the process in suit made with about .02% of oil to ore (Vol. 8, pp. 4712-4713, XQs12-13), and illuminated in the same way as the oil froth, but manipulated much more violently.

In the moving pictures metal particles are seen dropping from the bubbles to which they are attached and being caught by other bubbles and the attachment of the metal particles to the air bubbles is quite clearly shown. The air bubbles are seen to act like rubber balls, squeezed together and catching and holding any falling metal particles. The effect of the agitation is a rearrangement of these bubbles. They persist in holding on to their metal particles notwithstanding the hard usage to which they are subjected. These pictures well show that in an air froth the metal particles are firmly gripped and held by the air bubbles just as the preceding pictures showed that with an oil froth or magma the metal particles are not held at all by the air bubbles; but that the air bubbles merely are weakly entrapped in a slippery mass of oil.

Five enlarged pictures of this portion of the film are in evidence as Plaintiffs' Exhibits 282-286, marked A1, A2, A3, A4, A5, respectively (Vol 9, pp. 5450-5455), but here also the original photographs should be examined. They show how the agitation has caused a complete rearrangement of the air bubbles without in any manner destroying the character of the structure, which remains a mass of air bubbles firmly carrying metal particles.

APPELLANT'S PHOTOGRAPHS OF FROTHS AND MAGMAS.

By way of offsetting the effect of appellees' moving pictures, most of which were used in the Miami case and which undoubtedly helped the courts in that case, appellant prepared for and gave a magic lantern exhibition with external views of various froths and magmas shown by reflected light and successfully concealing the interior structures of the floats exhibited. As Dr. Grosvenor testifies the photographic work was excellent, but the conditions chosen were such as to exhibit only surface similarity and give no information as to structure. Therefore in his opinion they were of no technical value whatsoever (Vol. 8, p. 4708, Q4). About the only point made as to these photographs was that they in some instances showed two spots of reflection on the bubble, which was taken to indicate an unbroken inner surface of the bubble, but Dr. Grosvenor testified that in his investigations he has made hundreds, if not thousands, of photographs of the actual interiors of the bubbles, and that the principal difficulty that he has met with has been the great number of re-

flections (Q5). Mr. Higgins testifies that he has examined these photographs carefully and with magnification, and that they do not show a characteristic picture at all, and that he cannot see that they are of any use whatever (pp. 4729, 4730, A2).

Most of these photographs were taken of floats produced by appellant's wonderful oil mixture, or a modification of it, containing crude or fuel oil, kerosene and pine oil, and these, by reason of the presence of a soluble frothing agent, produced aerated floats with varying quantities of oil. The variations were from .4% to 1.5%. He also used pine tar oil in variations from .4% to 2%, and this also contains soluble frothing agents (Higgins, p. 731, Q9). He also used wood tar oil with smaller variations, and this also contains soluble frothing agents (*idem*). He used California eucalyptus, which is an essential oil and contains soluble frothing agents (Qs5, 6), and which it may be added has never proved of any value in flotation, although the Australian Eucalyptus Amygdalina has been extensively used in Australia in the froth flotation process (Qs3, 4). With 25% of alleged kerosene he obtained a floating magma, but it later turned out that this kerosene was contaminated with pine oil, as fully set forth herein under the heading Kirby patents. He also obtained a float with 5% of a smelter fuel oil with a very low grade flaky molybdenite ore, which was in fact a magma (Q11). Whether or not this fuel oil was likewise contaminated does not appear, but it is certainly open to suspicion since it was obtained from appellant's plant where the oils are poured into tanks without regard to

their previous contents and without cleaning the tanks, as testified to by Mr. Dosenbach (Vol 7, p. 3889-3891, XQs149-151).

Mr. Phillips' speed of agitation was terrific. He thought it was about 1800 revolutions per minute, although he admitted that he did not know (Vol. 6, p. 2918, Q219), but Mr. Higgins measured it and found it was between 9000 and 10,000 revolutions per minute (Higgins, Vol. 8, p. 604, Qs410, 411).

These experiments and photographs, even when not open to suspicion as to the purity of the materials used, were of no value whatsoever as to any question in issue herein, and the whole proceeding was a weak effort to offset the really instructive moving pictures shown in behalf of the appellees. They are not referred to in appellant's brief.

THE FINDINGS AND OPINION OF THE DISTRICT COURT.

The Findings.

The District Court in the case at bar found the issue of validity and both the issues of infringement in favor of appellees (plaintiffs) and against appellant (defendant)—that the patent is valid as to all the claims in issue, namely, claims 1, 2, 3, 5, 6, 7 and 12, and also claims 9, 10 and 11 as limited by disclaimer (pp. clxxvii and cxcvi) and that the appellant had prior to January 7th, 1917, infringed all of the claims in issue, claims 1, 2, 3, 5, 6, 7 and 12 and claims 9, 10 and 11 as limited by disclaimer, and since January 7th, 1917, had infringed claims 1, 2, 3 and 12 and claims 9, 10 and 11 as limited

by disclaimer (pp. clxxvii to cxcvii); and the District Court therefrom concluded that the appellees were entitled to injunction and to an accounting of profits and damages, in accordance with the prayer of the Bill and Supplemental Bill, and so decreed (pp. cxcv to cxcviii).

The Opinion.

The Opinion in explanation of these findings (pp. clxxvii to cxciv) states the issues as novelty, invention, infringement, alleged delay and defects in disclaimer, and estoppel by previous arguments of appellees' counsel.

Novelty and invention are discussed on pages clxxviii to clxxxix; disclaimer on page clxxxix; infringement on page clxxxix to cxciv; and estoppel on page cxciv.

Novelty and invention as discussed in the opinion below.—On the issues of novelty and invention the District Court calls attention to the fact that those issues were decided by the Supreme Court in plaintiff's favor and against the defendant on the record in the Hyde case (242 U. S., 261), and in that situation and as a fundamental principle touching the consideration of new evidence in the case at bar it says (p. clxxxviii):

> "If it be conceded that new evidence might warrant and demand that a trial court hold invalid a patent by the Supreme Court held valid, such evidence must be unequivocal, clear and convincing, in quality and quantity that inspires confidence and produces conviction that the patent is invalid and that the Supreme Court would so determine beyond a reasonable doubt."

Of the new evidence in the case at bar the court says (p. clxxxiv):

> "The great mass of new evidence herein is but cumulative of the Hyde suit. The only new publication is the California Journal of Technology detailing a suggestive but rather misleading and abandoned experiment sufficiently referred to and disposed of in the Miami suit."*

Summing up as to the new evidence the court says (p. clxxxix):

> "Not only does it fail here [i. e. to inspire confidence and produce conviction that the patent is invalid and that the Supreme Court would so determine beyond a reasonable doubt] but it strengthens the conviction that the patent is valid."

In reaching this conclusion as to the new evidence in the case at bar and its effect on the issues of novelty and invention, the court first refers to the more recent history of the invention and discusses the nature of the invention.

As to the more recent history, the court points out that the evidence in the present suit (p. clxxviii)

> "discloses that though the use of the process is very wide, extensive and growing, its simplicity, economy and success still surprise and gratify the metallurgical world."

*In the Miami suit the same patent was involved as here and two later patents and the same prior art was set up by the defendant and in addition the California Journal of Technology. In the District Court there (237 Fed. 609) the California Journal of Technology is discussed on p. 623. It was there held that this article while suggestive did not negative invention in the patent in suit, that the experiments were mere laboratory tests and did not disclose the inventive idea and were in fact misleading. On appeal in that case (244 Fed. 752) the California Journal of Technology is referred to on p. 755 (pamphlet opinion, p. 6). After considering the entire prior art including the California Journal of Technology the Circuit Court of Appeals for the Third Circuit announces its conclusion, p. 756 (pamphlet opinion, p. 6), that the patent here in suit was not anticipated and involved a patentable invention of a high order of merit. The California Journal of Technology was not before the Supreme Court in the Hyde case, but it was, even more than Froment (which was there considered and dismissed as little more than a laboratory experiment and of little use in practice, 242 U. S. 261), a mere "laboratory experiment," and was never even tried in practice.

As to its nature, the court points out that the evidence in this suit discloses the fact that (p. clxxviii)

> "its laws or principles of operation still interest and puzzle the scientist,"

and quotes the appellant's witness, Prof. Bancroft, of Cornell:

> "In the beginning it was very little knowledge and mostly guesswork and since then there has been every year a little more knowledge and still a great deal of guesswork."

And the court thus comments on this (p. clxxviii):

> "Though speaking for himself alone, the learned doctor's estimate might well be applied to all, practical layman and expert scientist alike."

Nevertheless, the court sets out what conclusion present knowledge warrants (p. clxxix):

> "At the same time, though heretofore somewhat ambiguous and obscure, present knowledge warrants the conclusion that the gist of this remarkable and valuable process and the actual discovery and invention are that whereas theretofore in ore concentration, air had been used in desultory and fugitive bubbles as a make-shift incident of, and supplemental to, oil and skin flotation, air can be made to do all the work by creating in water-ore pulp modified by a suitable oily contaminant, an infinitude of bubbles."

The court finds that the invention is novel, saying (p. clxxix):

> "It is the first of its kind and the patent sufficiently discloses it and methods to those skilled in the art."

The court points out that ambiguity and obscurity have been as much due to the extreme mechanical simplicity of the process as to its novelty and, in an ex-

planation of its laws and principles, the court says (p. clxxix):

> "The tendency was to attach prime importance to reduction in amount of oil used, when in fact this is but a necessary incident (for which there are substitutes if not equivalents) to the creation of the infinitude of bubbles that do the work."

And, continuing—

> "Despite this tendency, and to overlook the simple and obvious, the patent fairly clearly sets out the various ways and means to create this infinitude of bubbles and that they do the work."
>
> "The tests to determine which kind and amount of 'oily substance yields the proportion of froth or scum desired,' that flotation is 'mainly from the inclusion of air bubbles,' the froth, the agitation, all are so many guides in the patent pointing the skilled operator to and including the infinitude of bubbles and the degree of agitation and amount of soap or oil to produce such bubbles, as surely as the word 'crystallization' points to appropriate temperature in Commercial Co. v. Co., 135 U. S. 189, and the words 'uttered sound' by the 'human voice' to articulate speech in the Telephone Cases, 126 U. S. 531."

The court then considers that part of the new evidence consisting of "learned dissertations upon the philosophy of the process—upon the philosophy of bubbles, the heart of it, by Professors Bancroft of Cornell, and Taggart and Beach of Yale. and Drs. Sadtler of Philadelphia and Grosvenor of New York". The court notes (p. clxxxi) that the quality of oil is of the first importance in the process but another quality of less importance is the preferential affinity of oils for metalliferous matter over gangue, remarking that this is of less importance because it is now known that, given

another contaminant than oil which possesses the same bubble-making quality, but does not have the preferential affinity for metal over gangue, flotation is equally successfully achieved.*

The court proceeds (p. clxxxi):

> "Air also possesses this 'preferential affinity' and in view of the foregoing it well may be that the capture as well as the flotation of the metallic particles is more due to the great volume of air than to the infinitesimal oil. That in this process air without oil cannot capture and retain the metallic particles, seems due to its inability to create bubbles without oil. And why this capture in any case, is still of the unsolved phenomena of the process."

The court points out that there are "critical proportions" of any oil used, but that this is not a sharp divide but rather a broad one, depending upon many circumstances mentioned and the court adds (p. clxxxii):

> "With excess oil, but not enough to defeat bubbles altogether, though of fair aspect to the eye, the bubbles will not do the work. In the excess oil in the films the metallic particles do not cling, but swim or slide to the bubble's lower surface, 'neck off'—detach and sink. The untechnical workman recognizes there are 'critical proportions' of oil, and small deviation from the pre-determined amount in the feed, whether more or less, manifests itself to him in the appearance of the froth and poorer results, and he knows and remedies the error in oil."

The court finds (p. clxxxiii):

> "Metallic content of ore seems of little importance,—sometimes seems to require oil inversely."

*The reference here is to the later discoveries of appellees' inventors that certain soluble re-agents when completely dissolved in the water of the pulp have the same froth-forming quality essential to flotation. See Patents Nos. 962,678 and 1,099,699 at issue and described in the Miami case (237 Fed. 609, and 244 Fed. 752), the former being in evidence here as Defendant's Exhibit 218, Vol. 9, pp. 5274-5277.

And an example is given. From that example another conclusion is drawn as follows:

> "It is the air and not at all the oil that floats the mineral, noting that in the first of this example 211 pounds of zinc are floated by air bubbles in the creation of which only .7 pounds of oil is used."

Three hundred pounds of zinc floated by the use of one pound of oil! Manifestly, as the court notes, this is not oil-lift through the pulp or oil-flotation on the surface of the pulp, but air-lift and air-froth flotation.

The court then observes that the manner of introduction of the air particles and the method of agitation cannot be vital, provided "the oil-coated mineral matter forms into a froth".

And the court speaking of agitation says:

> "And it is all one whether this be applied agitation or self-agitation—the agitation set up by the air particles themselves in merely rising through the mass and thereby coming in contact with both water and oil, all co-acting to form bubbles which capture the metal."

The court concludes its consideration of the philosophy of the process as follows (p. clxxxiii):

> "The mineral particles, either oiled before or by contact with bubbles, attach to and enter the viscous film of the bubbles. The particles also increase the viscosity of the bubble films, armor them and increase their stability, perhaps as stays that, decreasing the area of unsupported surfaces, increase the latter's ability to resist rupture."

The court, dismissing without comment the California Journal of Technology, other than the reference to an adoption of the reasoning of the opinions in the Miami

suit on that subject, considers the new evidence (p. clxxxiv):

> "that progress in the process and methods of operating it, now discloses that with some ores and some oils or mixtures of oils, the process can be fairly successfully operated with one per cent and more of oil."

In this connection, the court finds it proven "practically without conflict" (p. clxxxiv):

> "that in all the operations with this process not to exceed .2 per cent of oil is used, save by defendant and others in like situation, and only since the decision in the Hyde suit, and solely to avoid infringement; that some oils are effective and more are ineffective to operate the process; and that the excess oil used is useless, wasted and harmful."

The court then considers in detail the appellant's contention (p. clxxxiv):

> "that this evidence demonstrates the process lacks novelty and invention, and that because of it the record is substantially different from the Hyde suit, the decision there should not control here, and the patent is and ought to be held invalid."

The court found this contention

> "without support in the patent and Hyde decision."

As to the patent, the court below analyzes the specification and claims on pages clxxxiv and clxxxv and points out that the specification speaks only of the proportion of oily substances being "considerably reduced" as compared with the proportions previously employed in the Cattermole process—

> "considerably reduced—say to a fraction of one per cent on the ore;"

that the proportion varies with different ores and different oils,

> "and so it is necessary to test 'to determine which oily substance yields the proportion of froth or scum desired;' "

that an example of a particular ore Broken Hill ore and a particular oil (oleic acid) is given wherein the proportion of oil prescribed varies from a very small fraction of one per cent. (.02) up to one-half of one per cent. (.5) on the weight of the ore.

As to the Supreme Court decision, the court below analyzes it at pages clxxxv to clxxxvii, as follows:

> "In upholding the patent the Supreme Court says that 'as described and practiced' the process consists 'in the use of an amount of oil which is "critical" and minute as compared with the amount used in prior processes, "amounting to a fraction of 1 per cent on the ore," and in so impregnating with air the mass—by agitation—as to cause to rise to the surface a froth—which is composed of air bubbles with only a trace of oil in them, which carry in mechanical suspension a very high percentage of the metal;' that 'it differs so essentially from all prior processes in its character, in its simplicity of operation and in the resulting concentrate, that we are persuaded that it constitutes a new and patentable discovery'; that the facts are not overstated by Liebmann that 'the present invention differs essentially from all previous results. It is true that oil is one of the substances used, but it is used in quantities much smaller than was ever heard of and it produces a result never obtained before * * *;' that the court is convinced 'that the small amount of oil used makes it clear that the lifting force which separates the metallic particles of the pulp from the other substances of it is not to be found principally in the buoyancy of the oil used as was the case in prior processes, but that this force is to be found, chiefly, in the buoyancy of the air bubbles introduced into the mixture by

an agitation greater than and different from that which had been resorted to before and that this advance on the prior art and the resulting froth concentrate so different from the product of other processes make of it a patentable discovery as new and original as it has proved useful and economical; that the court agrees with the House of Lords decision; that the process is not one before described, but a new method in which flotation is by the 'buoyancy of air bubbles;' that tests to determine the necessary 'amount of oil and the extent of agitation,' and 'the range of treatment within the terms of the claims,' satisfy the law; but that while the patentee 'discovered the final step, precedent investigations were so informing that this final step was not a long one and the patent must be confined to the results obtained by the use of oil within the proportion often described in the testimony and in the claims of the patent as 'critical proportions' amounting to a fraction of 1 per cent on the ore' and therefore—the patent is valid as to claims Nos. 1, 2, 3, 5, 6, 7 and 12, but invalid as to claims 9, 10 and 11."

The court then states the following conclusion:

"It seems clear neither patent nor decision undertakes to say the process depends upon less than 1 per cent of oil or is inoperative with 1 per cent or more of oil."

Summing up as to the notion that the invention resided in the use of a fraction of 1 per cent. of oil on the ore, the court says (p. clxxxvii):

"It is true that in the beginning and during the Hyde suit the patentees inclined to so believe or at least believed better results would be obtained with a fraction of 1 per cent. of oil. Perhaps limited investigation and experience with a few ores and oils justified the belief. Indeed, all experience to date, plaintiff's, defendant's, strangers', demonstrates that with any ore and any efficient oil, less than 1 per cent. of oil gives better results, all circumstances considered. The 'critical proportion' referred to seems absent in terms from the patent, and

> ought not to be adversely inferred in disregard of construction in favor of the patentee where the patent is ambiguous. The patent describes oil 'considerably reduced,' and refers to a 'fraction of 1 per cent.' by way of example. And though some claims limit oil to such fraction, and, a limited range within it, others are for 'a small quantity', and for that reason held invalid by the Supreme Court. With the later knowledge of this suit it is doubted that such would be the decision now. It is to be observed that this limitation of the patent indicates the Supreme Court believed the process might be operative with 1 per cent. and more of oil, and contemplated that this would not defeat the patent, but might affect infringement. If the patent is limited to the use of a fraction of 1 per cent. of oil, that the process can be operated with 1 per cent. and more is not material to validity, though it may be to infringement. For if a patentee limits his claim voluntarily, or because he does not know the extent of his invention, he abandons the excess and the patent is valid to the extent of the claim."

The general conclusion of the court below as to novelty and invention is that the new evidence in the case at bar over that in the Hyde case

> "strengthens the conviction that the patent is valid."

Disclaimer as discussed in the opinion below.—The subject of disclaimer is dealt with on page clxxxix. The court holds that the disclaimer "was timely filed," noting that it was within the time limited for petitions for rehearing in the Supreme Court.

As to the substance of the disclaimer, the court holds that it fairly conforms to the language of the Supreme Court decision. Under that decision, the court points out, claims 9, 10 and 11 included what the patentees were entitled to and more.

> "The decision pointed out the excess. The patentees disclaim the excess. They can safely rely upon the decision and a disclaimer conforming to the language of the decision is sufficient."

Infringement as discussed in the opinion below.—On the issue of infringement the court deals first with the period prior to January 7, 1917, and later with the period subsequent to that date.

As to the period prior to January 7, 1917, the court points out that the appellant admits infringement before suit brought and up to that date, and the court summarizes the testimony as to the enormous and profitable extent of that infringement, and from the figures year by year it finds (p. cxc)

> "Progress is indicated by leaner ores, less oil, higher grade concentrates, greater recoveries, all coincident with advancing time."

The court adds

> "It is noted that the process is responsible for advance in methods, devices, and machines for its operation."

And the court briefly describes the process constituting the admitted infringement from a date prior to the filing of the original Bill down to January 7, 1917 (p. cxc).

As to infringement after January 7, 1917, the court points out that (p. cxci)

> "the defendant's methods are as before, save pneumatic as well as mechanical agitation is employed in the lower four cells of the pyramid. Some spitzkasten are blocked, an additional cleaner operation is used, and from which

> for some unexplained reason 8.65 per cent. zinc tailings go to waste, and oil in amount 1 per cent. and more on the ore is used."

Considering this question of infringement (the only contested question of infringement in the case) the court points out, first, the practical effect of the use of the excess oil. It says (p. cxci):

> "Defendant not very insistently claims results for this latter period are more profitable than for the former, but plaintiff's analysis, neither denied nor criticized, and beyond both, of defendant's reports and tabulations makes manifest the fact is otherwise to the extent of about $1.75 per ton of ore—an enormous loss on 45,000 tons monthly"—

a loss of the order of $1,000,000 a year.

And the court adds:

> "There is considerable like testimony in reference to operations by other infringers."

These losses have practically no relation to the increased cost of the oil. They are quite apart from that and belong to a different order of magnitude.

The court points out that in view of the very large operations, investigations and experiments through several years by the great infringing concerns, it is incredible, if the use of 20 pounds of oil per ton of ore results in more profit, that they would have waited to discover the fact until after the Supreme Court decision in the Hyde suit.

The Court says:

> "Defendant practically admits that it now uses the present amount of oil merely to avoid the patent. * * * The evidence likewise persuades.

> "If the excess of oil," says the court (p. cxcii), "were effective and useful and not inert, useless and harmful, it would be without the claims of the patent, would be of that the patentees abandoned to the public, and would involve no infringement."

Considering next the bearing of the Supreme Court decision on this question of infringement (p. cxcii) the lower court, while critizing appellees' argument based on the use of the words, "the results obtained" as meaning like or same results, interprets that Supreme Court opinion as follows (p. cxcii):

> "It is believed, however, that the court employed the word 'use' in its, or the ordinary, sense of beneficial service."

The District Court thus interprets the Supreme Court decision, where that court says:

> "the patent must be confined to the results obtained by the use of oil within the proportions," etc.,

as meaning

> the patent must be confined to the results obtained by the beneficial service of oil within the proportions, etc.

that is to say,

> The patent must be confined to the results obtained by the use in beneficial service of oil within the proportions, etc.,

beneficial service meaning that service or function which achieves the mineral-froth flotation.

The District Court then lays down the proposition.

> "Patent law is not concerned with the useless, and a valuable result sought is not 'obtained' by but *despite* the use of an excess of an essential ingredient, which excess renders no or ill service."

Turning to the evidence the court says (p. cxcii):

> "From the evidence it appears the larger part of the oil used by the defendant and all in excess of a fraction of 1 per cent on the ore, if not inert is ineffective, wasted and injurious to the process and results. Before January 7, 1917, defendant used only pine oil and about 1.43 pounds per ton of ore, with excellent results. Since said date it uses a mixture of 20 to 24 pounds of oil per ton of ore, made up of 18 per cent. of pine oil, 12 per cent. of kerosene oil, and 70 per cent. of fuel oil, with poorer results. The kerosene and fuel oil are petroleum."

Reviewing the evidence as to these petroleums and their effect in the process the court says (p. cxciii):

> "As before stated many oils are ineffective to operate the process and that is because they have not the quality that contributes to bubble-making. What this quality consists of, wherein it lies, does not appear. With these ineffective oils agitation will not produce froth and so there is no flotation of the metallic particles. One of defendant's witnesses testifies that in the laboratory and plant of the Utah Copper, one thousand oils have been tried, of which two mixtures give satisfaction. Petroleum seemed generally ineffective by the evidence of both parties, though some of defendant's witnesses testify to sometimes successful experiments with them. Incidentally, there is suspicion that with experiments as with figures can be done anything for or against, without impropriety in the operator."

The court then states from the evidence, and thereby emphasizes the fact, that (p. cxciii)

> "Some petroleums are used in limited quantities but always in combination with a recognized bubble-making oil, and only, it is said, for a somewhat bubble stabilizing effect."

The court then reasons as follows (p. cxciii):

> "Defendant's present mixture of oil contains more pine oil on the ore than it used alone before January 7, 1917.

The other factors the same, it is obvious the excess petroleums in the mixture are responsible for the poorer results."

The court then states its conclusion of fact (p. cxciii).

"Defendant uses the patent process, uses plaintiff's invention of ore concentration by air bubble flotation, uses the same elements in the same combination in the same way with the same function to the same, but poorer, results,"

and its conclusions of law (p. cxciv):

"and, exceeding the patent claims in reference to one ingredient (oil) uselessly, wastefully and injuriously and merely with intent to avoid the letter of the patent, does not avoid infringement. The addition of the excess oil no more adds to or changes the process, no more avoids infringement, than would the addition of milk or other useless substance not a part of the process. The excess oil either exercises no function or less efficiently exercises the same function in the same way as the limited oil and to the same but poorer results."

And the court continues with the more general proposition of law (p. cxciv):

"To secure to patentees their invention, the law looks quite through mere devices and forms, to the substance of things. And if in substance the invention is taken, if the thing that does the work is taken, all devices to evade the letter of the patent avail nothing to escape the consequences of infringement. Neither principle nor authority to the contrary, is cited or known to the court."

Estoppel as discussed in the opinion below.—The matter of estoppel as affecting infringement is quickly disposed of, the court merely saying that neither in pleading nor proof do the elements of estoppel appear.

MISREPRESENTATIONS TO THIS COURT IN THE HYDE CASE.

The decision of this court in the Hyde suit (214 Fed. 100) appears to have been founded upon the belief by this court that the prior art disclosed processes capable of producing mineral froths substantially the same in all characteristics as that which was in fact first produced by the process of the patent in suit. Upon that belief as to what was disclosed in the prior art this court said that the invention was a mere matter of degree. This is summed up in the opinion of this court, as follows:

> "The evidence in the case, together with the illustrations thereof afforded by demonstrations of the various processes which were made in aid of the argument before this Court, convinces us that the froths in all these processes is the same, with the exception that there is less oil (as there must necessarily be) in the appellee's froth than in the others. The froths are all similar in appearance, they all rise to the surface after the same amount of agitation, they all gather with equal efficiency the same quantity of metal, and all may be removed from the surface in the same way" (214 Fed. 106).

These conclusions appear to have been largely founded upon demonstrations made in this court in behalf of the defendant-appellant in the Hyde suit which were exhibited as veritable representations of the prior art.

It appears in the opinion that this court took the Haynes process (British patent 488 of 1860) as one of the processes producing this identical froth. In the trial of the case at bar appellant's expert Dr. Sadtler admitted that this was a process wherein no froth was produced and the concentrate was in fact produced in

the form of a pasty mass immersed in water *(supra,* p. 173).

This court believed that the Schwarz process (patent 807,503, issued after the invention in suit on an application filed May 27, 1904, before the invention in suit) was a process which produced this identical froth, and a demonstration alleged to show the Schwarz disclosure was exhibited to this court in behalf of defendant in the Hyde suit. That contention has been abandoned by this appellant. At a trial, where everything used and produced is subject to analysis, it is impossible to sustain the argument or demonstration as to the Schwarz patent which was presented to this court by the defendant in the Hyde suit. These are specific instances of arguments presented by counsel for the defendant in the Hyde suit in this court and enforced by demonstrations in the presence of this court which had to be abandoned at an open trial. The arguments were false. The demonstrations were false. This, however, was equally true as to all that was said and as to all the demonstrations that were made in this court in behalf of the appellant in the Hyde suit as to the prior art.

Another patent which this court believed produced the identical froth of the process in suit was the Kirby patent. A demonstration was made in behalf of the defendant in the Hyde suit in this court wherein 25% of alleged kerosene oil was used and wherein a float was produced which looked like a froth. This demonstration was a complete surprise to plaintiffs-appellees. Defendant's expert had testified to making such a demonstration, but plaintiffs' experts had been unable to

reproduce it. The trial was not in open court, and defendant's demonstration had not been made in the presence of plaintiffs' representatives. The mystery of the production of this float that resembled a froth remained unsolved until the trial of the case at bar, when appellees' expert Mr. Higgins, having been supplied on demand with the identical apparatus and materials used in one of these 25% alleged kerosene-oil-Kirby experiments, found that he was unable to reproduce it with some eight specimens of kerosene purchased in the open market, but that by the addition of a minute amount of pine oil, containing a useful frothing oil and a soluble frothing agent, he could reproduce it exactly. He further found that the kerosene specimen used by appellant's witness contained a soluble frothing agent which gave indications of being pine oil, and it was admitted that it came from a tank which might have formerly contained pine oil. This demonstrated that the peculiarity of the experiment is that it requires the presence with the kerosene of some foreign substance which is a soluble frothing agent (*supra,* pp. 209-212). Possibly such impure kerosenes exist and can be found, although appellees have not been able to find them. Certainly experiments in this court in behalf of the defendant at the Hyde trial were carried on with an impure kerosene which contained a soluble frothing agent, however that soluble frothing agent got there. The 25% alleged Kirby experiment was repeated by the defendant in the Supreme Court of the United States, but there plaintiffs were able to show the court the real Kirby apparatus exactly reproduced operating with the real Kirby ore, and the Supreme Court was not misled.

This Kirby apparatus and Kirby ore were not in evidence in the Hyde suit, but had first appeared in the Miami suit, and the experiment was made in the Supreme Court after a statement of that fact, and with the consent of the Justices.

Another patent which this court believed produced the identical froth of the process in suit was the Everson patent. This patent discloses two methods. The first method, which happens to use only 5% of oil, was represented to this court as a froth process, and this court so believed and so stated in its opinion. Appellant's expert Dr. Sadtler in the case at bar admitted that it is merely a paste or pudding process like Haynes, in which gangue was made to exude from a mass of oil and ore by manipulation in a wash basin (*supra, pp.* 174, 175). Everson's second method is a petroleum method using 17% of what is very nearly kerosene oil. An experiment alleged to represent this Everson second method was testified to in the Hyde record in behalf of defendant. It comes within the same category as the alleged Kirby experiment. It was not repeated in this court, the alleged Kirby experiment being referred to as substantially representing it, but it was repeated, with alleged kerosene oil, in the Supreme Court of the United States. It was a false representation of what Everson discloses, and it required a kerosene which contained a soluble frothing agent to produce it. But plaintiff exhibited in the Supreme Court of the United States an experiment in a batea or miner's wash pan (representing vanning or wet table concentration) which exactly followed the Everson dis-

closure and produced an overflow in suspension of oil and metalliferous mineral and absolutely no froth. Here again the experiment shown by the plaintiffs in the Supreme Court was not in evidence in the Hyde suit, or shown to this court, and had first appeared in the Miami suit, and was repeated in the Supreme Court after a statement of the fact that it was not in the record before the court, with the consent of the Justices. The Supreme Court of the United States saw the true Everson process and was not misled.

In the case at bar appellees repeated this experiment exactly reproducing the disclosure of Everson's second method (*supra, pp.* 176, 177).

It may be noted that both the alleged Kirby float and the alleged Everson float exhibited by the defendant were not froths at all, although they looked like froths. They were magmas, masses of oil with metalliferous mineral diffused through the oil, and inflated by air bubbles to which the metalliferous mineral particles were not attached.

This court believed that the Froment process produced the identical froth of the process in suit. Defendant at the argument in the Hyde case in this court exhibited a demonstration wholly unfounded, based upon nothing in the record, and alleged to represent the Froment description, which was a mere fraud and a sham. This was not repeated in the Supreme Court of the United States, but an alleged Froment experiment was shown there by defendant said to correspond to the Froment patents, but in fact corresponding to and representing nothing of the prior art.

In the trial of the case at bar no effort was made by appellant to make any demonstration alleged to represent the Froment description, and the Supreme Court experiment alleged to represent the Froment patents was not repeated.

The above includes all demonstrations made in this court at the argument of the Hyde suit, except an imperfect and spoiled representation of the process in suit. These false representations in demonstration and argument led this court to believe that the froths of the prior art and the froths of the process in suit are the same "with the exception that there is less oil" and that "the froths are all similar in appearance, they all rise to the surface after the same amount of agitation, they all gather with equal efficiency the same quantity of metal, and all may be removed from the surface in the same way". This court was in error as to the facts because it was misled as to the facts.

LAW AS TO INTERPRETATION OF PRIOR ART DISCLOSURES.

Prior art processes should be considered and weighed only in the light of the knowledge of their own day.

The Privy Council case, printed in the Hyde Supreme Court Record, pp. 747-756 (*Ore Concentration Co.,* 1905, *Ltd., v. Sulphide Corporation, Ltd.,* 31 R. P. C., 206), well states the law of England at 750:

> "It is a general canon of construction, applicable to all documents, that the document should be construed as if the court had to construe it as of the date of publication to the exclusion of information subsequently discovered. In patent cases the observance of this canon of construction has great importance. It is common, in such cases, to

> have a number of documents placed in evidence extending over a considerable period of time, each of which is relied on as disclosing relevant information prior to the date of the patent. If these documents require the assistance of experts to aid the Court in construction, the Court is deprived of the benefit of such assistance if the witness is asked to read the document not in reference to what was known at the date of publication, but to knowledge only acquired at some subsequent date."

Naylor v. *Alsop Process Company,* 168 Fed., 911, 920, C. C. A., 8th Circuit, Sanborn and Vandevanter, C. Js., and Amidon, D. J., opinion by Amidon, D. J.

Judge Amidon said:

> "When it is sought to ascertain the state of the art by means of prior patents, nothing can be used except what is disclosed on the face of those patents. Such patents cannot be reconstructed in the light of the invention in suit, and then used as a part of the prior art."

Judge Amidon then referred to a patent of the prior art which admittedly on its face did not disclose the process in suit, and to the evidence in behalf of the defendant to the effect that by tests they had found that the process disclosed actually produced a material not mentioned on the face of the patent and said:

> "Prior patents are a part of the prior art only by what they disclose upon their face. If they are carried into effect in the industrial world, what is learned from that experience also becomes a part of the prior art. An expert, however, cannot take a process patent, which has never been applied industrially, and work the process in his laboratory, and discover therefrom something which is not disclosed on the face of the patent, and then transfer that experience back to the time of the patent, and make it a part of the prior art for the purpose of defeating a meritorious invention. That would be *ex post facto* law of the most pernicious character."

Railroad Supply Co. v. *Hart Steel Co.,* 222 Fed., 261, 273, C. C. A., 7th Circuit, Baker and Seaman, C. Js., and Geiger, D. J., opinion by Judge Baker:

> "So far as human minds are able, judges should exclude from view the disclosure of the patentee, should regard the patentee's problem as of a time antedating the application, and should, therefore, not too readily accept the *ex post facto* wisdom of the bystander. Prior art structures are to be examined in view of the purposes and laws of such structures. It is not enough that a prior art device approach very near the idea of the patent in suit; it must so clearly disclose the idea that it would be apparent to a mechanic of ordinary intelligence who was not examining the device for the purpose of discovering in it the idea of the patent. For, if he already had that idea, he would not be getting it from the prior art device, but from his own imagination or some other source."

Tannage Patent Co. v. *Donallan,* 93 Fed., 811 (C. C., D. Mass.), Colt, C. J. Here an effort was made to prove anticipation of the Schultz process for tanning hides by evidence of defendant's experts that the process disclosed in a prior patent of Francillon as a dyeing process was in fact a tanning process. Judge Colt said (pp. 820, 821):

> "With the Schultz process before him, it may be possible for a skilled expert to tan a skin by following what he believes to be a liberal construction of the Francillon specification, but that is not the question. Francillon is not to be interpreted in the light of and with the knowledge of the Schultz process. The question is assuming the Schultz process did not exist, does Francillon disclose a tanning process, and by following literally his instructions have you solved the problem of a practical and commercial method of chrome tanning? We think the question must be answered in the negative."

Again, Judge Colt says as to the weight to be attached to experimental operations as evidence of practically useful procedures (p. 815):

> "A process carefully conducted by a skilled expert may be adequate to tan skins, and yet be commercially perfectly worthless. Such experimental success should have little or no weight in determining the question of the validity or scope of the Schultz patent."

Schmertz Wire Glass Co. v. *Western Glass Co.*, 178 Fed., 977, C. C., N. D. Ill., Sanborn, D. J. Here the patent was for a process of making wire glass, and the court gave consideration to alleged anticipation by a British patent to Hyatt. The court says as to this defense (p. 988):

> "It may not be difficult, in the present state of the art, to read the Schmertz invention into the Hyatt disclosure; but could it have been done in 1874? No one ever succeeded in doing it, and this is some evidence at least that the description was defective. Was the original conception that of Hyatt or of Schmertz? By using twentieth century magnifying glasses a nineteenth century method has been found efficient which never was so before, and the immensely important point of view of an advanced art is thus unfairly used to discover an original conception never acted on or made anything of, and which never had any practical or beneficial existence."

THE SUPREME COURT DECISION IN THE HYDE CASE (242 U. S. 261).

As pointed out in our main brief this decision upholds the patent in suit as good and valid in so far as concerns claims 1, 2, 3, 5, 6, 7 and 12 and invalid as to claims 9, 10 and 11 because not confined to the

results obtained by the invention. This defect in claims 9, 10 and 11 has since been cured by disclaimer made in exact accordance with that decision.

The facts of infringement in the case at bar do not call for or require a determination here of the question whether or not the Supreme Court decision confined the invention and all the claims (claims 9, 10 and 11 by the disclaimer) to the use of a fraction of one per cent. of a suitable mineral-frothing oil on the ore or not. But if this court desires from any point of view to give consideration to that question the following additional discussion of the Supreme Court decision should be considered.

The Supreme Court, in upholding the patent as valid had before it the decision of the District Court in the Hyde case which did not so limit the invention or the claims, the decision of this court in the Hyde case which seems to have assumed that limitation without discussion, and the decision of the District Court in the Miami case which (agreeing with this court in that regard) assumed that limitation without discussion. The limitation of which we speak is an arbitrary arithmetical limitation to a fraction of one per cent. of oil to ore regardless of the varying characteristics of the ore and of the oil and regardless of the varying conditions of heat, acidity and agitation that may be employed. It is not a functional limitation. There is no magic in one per cent. of oil on the ore.

The three decisions that were before the Supreme Court differed among themselves also in another respect which *was* functional and which went to the heart of the matter

both of validity and, one would naturally conclude, of construction also. The decision of the District Court in the Hyde case had held that a new principle of operation had been evoked and a new result obtained. The decision of this court in the Hyde case had held that the principle of operation was old and that the result obtained was old. The decision of the District Court in the Miami case had held with the District Court in the Hyde case that the principle of operation was new and that the result obtained was new.

The Supreme Court also had before it the decision of the House of Lords and the decision of the Privy Council in the two English cases which had held that a new principle of operation had been evoked and a new result obtained. The two English decisions of course considered only the process as such and not any particular patent for the process. The same thing was really true also both in the Hyde case and in the Miami case for in the Hyde case the defendant had used a small fraction of one per cent. of a mineral-frothing oil (.16 per cent. on the ore) and the defendant in the Miami case had done the same thing, and the question of construction, that is to say, of breadth of claim did not arise in either case for the purpose of the issue of infringement but only as it was incidental to and a part of the issue of validity.

The Supreme Court considering the issue of validity and validity alone and finding the fact to be (in agreement with the District Court in the Hyde case and with the District Court in the Miami case and with the House of Lords and with the Privy Council and

in disagreement with this court in the Hyde case) that the patentees had evoked a new principle of operation and obtained a new result, held the patent valid to the extent that its claims were confined to the process that obtained that new result. This holding discriminated between functional and arbitrary confines, adopting the former and rejecting the latter. For the holding was accompanied by the explanation that

> "ores vary infinitely, each one presenting its special problem, and it is obviously impossible to specify in a patent the precise treatment which would be most successful and economical in each case",

and by overthrowing as untenable the claim that the patent is invalid because it prescribes that for different ores preliminary tests must be made

> "to determine the amount of oil and the extent of agitation necessary in order to obtain the best results".

The Supreme Court decision defines with great clearness both the new principle of operation evoked (i. e. the air separation and air lift of the mineral particles) and the new results obtained (i. e., the mineral-carrying air-froth). All the evidence as well as the patent itself showed that this principle was evoked and these results obtained when the quantity of the proper oil used was a fraction of one per cent. on the ore and the decision seizes upon that fact as a convenient way of identifying and referring to the new results. But the decision does not undertake to say that those new results cannot be obtained by the use of more than a fraction of one per cent. of a mineral-froth-forming oil. It was not necessary that the court

should decide that question of fact, nor was it necessary that the court should decide whether as a question of law any of the claims of the patent might cover and include so much, nor the question whether more than one per cent. of a suitable oil might not under certain circumstances be an equivalent in the process for a fraction of one per cent., nor the question whether an oil which did not do the work of the process either to evoke the new principle or to obtain the new result would be the oil or the oily liquid of the claims, nor the question whether a suitable quantity of a suitable oil that would evoke the operation and obtain the result would be any the less the oil or the oily liquid of the claims because intermixed with an oil that would not do the work.

The District Court in the Miami case had declared claim 9 invalid, not because it was not confined to the new results obtained by the patentees but because it was not limited to the use of a fraction of one per cent. of oil on the ore. The Supreme Court held claims 9, 10, and 11 invalid, not because they were not limited to the use of a fraction of one per cent. of oil on the ore, but because they were not confined to the results obtained by the use of a fraction of one per cent. of oil on the ore.

There are two differences between claims 9, 10, and 11 on the one hand, and the other considered claims of the patent on the other hand.

The first difference is this: claims 9, 10 and 11, in speaking of the oil, say, "a small quantity", whereas the other claims say variously "a small proportion

* * * (amounting to a fraction of one per cent. on the ore)", "a fraction of one per cent.", etc.

The second difference is that claims 9, 10 and 11 are not in terms limited to a froth formed by, or constituted of, "the oil-coated mineral", whereas the other claims are.

Judge Bradford seized hold of the first difference, construing "a small quantity" as including more than one per cent., and consequently holding the claim invalid because of his assumption that the invention was arbitrarily limited to the use of a fraction of one per cent. The Supreme Court, however, as we believe, rejected that reasoning, and laid hold of the other difference, construing claims 9, 10 and 11 as broad enough to cover and include froths that were not the mineral-carrying froth of the invention and of the patent—the only result that was new—and therefore held claims 9, 10, and 11 invalid as not confined to the results obtained by the patentees.

This confining of the patent, not to any arbitrary quantity of oil, but to the results first obtained by the patentees, is the most significant thing about the decision in this connection.

The holding of the court is that (p. 8*)

> "the patent must be confined to the results obtained by the use of oil within the proportions often described in the testimony and in the claims of the patent as 'critical proportions' 'amounting to a fraction of one per cent. on the ore,' and, therefore, the decree of this court will be that the patent is valid as to claims Nos. 1, 2, 3, 5, 6, 7 and 12, and that the defendant infringed these claims, but that it is invalid as to claims 9, 10 and 11."

The clear implication of the language used is that the purpose of the court in declaring claims 9, 10 and 11 invalid was *to confine the patent to a process identified, not by the use of oil within the proportions specified, but by the sort and character of results that are exemplified in the case where the amount of oil used is within the proportions specified* (always of course assuming the presence of ore, water, an oil that will produce those results, and agitation).

Obviously the court did not say that the patent was to be sustained as a patent for a result. It merely asserted the necessity of a limitation in all valid claims to the result that is obtained by ore, water, a suitable oil and agitation with the oil in the proportion of a fraction of one per cent. on the ore, viz., the described mineral-carrying froth. It found such a limitation in all claims considered except claims 9, 10 and 11, and therefore held all considered claims valid except 9, 10 and 11.

In claims 9, 10 and 11 there is no statement that "the oil-coated mineral matter forms a froth", as in claims 1, 2 and 3 or that "the oleic acid has been brought into efficient contact with the mineral and has formed a froth therewith", as in claims 5, 6 and 7, or "to cause the oil-coated mineral to form a froth" as in claim 12, but only "agitating the mixture to form a froth," without any statement that the mineral is to form the froth. Thus "the resulting froth concentrate" of air-bubbles and mineral was not specified in these claims and they were not confined "to the results

*The references in this brief to the Supreme Court decision in the Hyde suit will be to the pages of the pamphlet opinion as published by the Supreme Court.

obtained'' which the Supreme Court repeatedly says characterize the invention.

The reasoning by which, and the circumstances under which, the court reached its conclusion confirm this interpretation of the meaning of that conclusion.

The court, having to deal with, and decide, the question whether invention was involved or required, proceeds by a comparison of the prior art processes with the process of the patent in suit, and by a definition of the latter as contrasted with the former.

Speaking of the process of the patent in suit, the court says (p. 3):

> ''it differs *so essentially* from all prior processes in its character, in its simplicity of operation and in the resulting concentrate, that we are persuaded that it constitutes a new and patentable discovery.''

Again (p. 5) it quotes as not an overstatement of the facts:

> ''The present invention differs *essentially* from all previous results. It is true that oil is one of the substances used, but it is used in quantities much smaller than was ever heard of, and it *produces a result never obtained before.*''

And again (pp. 5, 6), it says:

> ''this advance on the prior art and *the resulting froth concentrate so different from the product of other processes* make of it a patentable discovery as new and original as it has proved useful and economical.''

The court dismisses the Cattermole metal sinking process as belonging to a different class. Of the metal floating class it dismisses Froment as little more than

a laboratory experiment that "has never proved of value in practice"; it dismisses Kirby as involving the use of an amount of oil which "was prohibitive in cost". It describes the prior art processes of the metal floating class (p. 2) as depending for their usefulness

> "on *the oil used being sufficient* to collect and hold in mechanical suspension the small particles of metal and metalliferous compounds *and by its buoyancy* to carry them to the surface of the mixture of ore, water and oil."

and says that in such prior art processes (p. 5)

> "*the lifting force,* which separates the metallic particles of the pulp from the other substances of it, is * * * to be found principally *in the buoyancy of the oil* used."

and it describes (p. 2) all of such prior art processes involving ore and water and oil as

> "Variously treating the mass—'the pulp'—thus formed so as to separate *the oil,* when *it* becomes impregnated or loaded with the metal and metal bearing particles, from the valueless gangue."

Thus the Supreme Court points out and emphasizes the *oil-lift* and the *oil-float* of all such prior art processes.

In contrast it describes (p. 5) the process of the patent in suit as one in which *the lifting force*

> "is to be found, *chiefly, in the buoyancy of the air bubbles* introduced into the mixture."

And the court records (p. 6) its full agreement with the House of Lords decision, quoting Lord Shaw there to the effect that the patentees of the patent in suit

> "are engaged upon a new method of separation. Instead of relying upon the lesser specific gravity of oil in bulk,

> they rely upon the production of a froth by means of an agitation which not only assists the process of the minute quantities of oil reaching the minute particles of metal, but forms a multitude of air cells, the buoyancy of which air cells, forming around single particles of the metal, floats them to the surface of the liquid."

And quoting Lord Atkinson there to the effect that

> "the lifting force is found not in the natural buoyancy of the mass of added oil, but in the buoyancy of air bubbles, which, introduced into the mixture by the more or less violent agitation of it, envelop or become attached to the thinly oiled metallic particles, and raise them to the surface. * * *."

The Supreme Court twice describes the new results of the process in suit as follows (p. 4):

> "This froth, on collection, was found to consist of air bubbles modified by the presence of the minute amount of oil used and holding in mechanical suspension between 70% and 80% of the total mineral content of the mass treated."

And again (p. 3):

> "a froth, peculiarly coherent and persistent in character, which is composed of air bubbles with only a trace of oil in them, which carry in mechanical suspension a very high percentage of the metal and metalliferous particles of ore which were contained in the mass of crushed ore subjected to treatment."

Thus the Supreme Court points out and emphasizes the *air-lift* of the mineral particles and the *air-froth* as holding them in the process in suit.

And in the above two descriptions of the new results —the new froth concentrate—it is to be noted that the oil whose presence is spoken of in the first case and characterized as minute, is *the oil that has acted to*

modify the air bubbles. And in the second case this idea is even more explicitly set out where the froth is said to be composed of air bubbles "with only a trace of oil *in them.*" It is the clear implication that the oil whose amount is to be minute, the oil that is to exist only as a trace, is the oil actually found in the air bubbles of the froth, acting by its presence there to modify those air bubbles and so to make them "peculiarly coherent and persistent in character." Other oil is wasted. That is the oil that does the work—the work of the process.

Further light is thrown on the Supreme Court decision in regard to its confining of the patent to the results obtained, etc., when it is noted, as we have pointed out in the main brief, that the Supreme Court seemed to have had particularly in mind toward the end of the opinion the Cattermole "Metal Sinking Process" and the results it obtained as the contrast to the patentees' results. Thus the court points out (p. 4) that the experimenters were working on the Cattermole process having the special purpose in mind at the time to trace the effect *on the results* of a reduction to the vanishing point in the quantity of oil used, and that the discovery in suit was made in the course of that investigation; that the patentees discovered that the granulation, on which the Cattermole process depended, practically ceased when the oleic acid (oil) had been reduced to about five-tenths of one per cent. on the ore, and that as the amount of oleic acid was further reduced a new phenomenon, a new result supervened, a "float froth"

which carried the metal upward in the pulp instead of downward as in Cattermole. This reduction in the amount of oil used in the Cattermole granulation process brought that factor as such down close to the patentees' amount, so that the final step that the patentees took, viewed merely as a reduction in oil, was not a long one, but that step reversed the operation, carried the metal to the top instead of sinking it to the bottom, evoked an air bubble separation and lift of the mineral particles in place of a sinking by reason of granulation, utilizing to that end the mineral-froth-forming characteristic of oil instead of the stickiness of oil, and obtaining as the final effect or product or result of the process a floating froth constituted of air bubbles modified by the presence of a minute amount of oil in them and carrying a large percentage of the mineral content of the ore, instead of sinking granules composed of oil-coated mineral particles agglomerated by the physical stickiness of the oil present on the particles in sufficient quantity to develop that characteristic.

So regarded, the Supreme Court holding that the patent must be confined to the results obtained by the use of oil in that way and to that end becomes luminously clear and bases the invention and the patent upon the bedrock of that new characteristic of oil that is utilized, that new power of air bubbles that is evoked, that new mineral-carrying air-froth phenomenon that results. And especially is this confirmed by the concurrent holding that the direction of the patent that a simple preliminary test must be made with each

new oil and ore to determine both suitability and quantity is sufficient.

If this is the correct interpretation and understanding of the Supreme Court decision, then claims 9, 10 and 11 were held invalid because not expressly confined to a process that would evoke this principle of operation and obtain these results. The disclaimer of March 28, 1917, confines the patent in so far as concerns claims 9, 10 and 11 to a process that will obtain these results, and this it does by disclaiming all excess over and above that subject matter, and claims 9, 10 and 11 are thereby made valid under the Supreme Court decision, just as the other claims are valid.

The arguments submitted to the Supreme Court in support of claims 9, 10 and 11 asked the Supreme Court to impose by construction upon these broadest claims just the limitation and confinement which the Supreme Court said in its opinion must be imposed upon the patent. The only difference between what counsel requested and what the Supreme Court decreed was that the court did not impose this limitation *by construction,* and therefore held the broadest claims to be invalid. But in its statement of the confinement to be imposed upon the patent the Supreme Court carefully *avoided a limitation to the use of a fraction of one per cent. of oil* and stated the limitation to be to *the effects or results obtained* as we had argued should be done.

Parts of our argument in the Supreme Court are printed in appellant's supplemental brief entitled "Plaintiffs' Limitations, etc." At page 152 a com-

plete statement from page 55 of petitioners-complainants' main brief in the Supreme Court is quoted. On pages 161 and 162 appellant quotes fragments of the argument discussing Judge Bradford's holding that claim 9 was invalid, which quotation, however, omits the most important and significant part of that argument. The full quotation is as follows (Brief for Petitioners-Complainants, Supreme Court Hyde Case, pp. 258-260):

> "*Claim 9.* It will be noted that although Judge Bradford finds that the process is dependent on the extreme tenuity of the film of oil on the metallic particles and that the selective action is due to the air bubbles and that the process is 'an air flotation process,' he nevertheless limits the breadth of the claims to the carrying on of the procedure with the employment *in the pulp* of a fraction of one per cent. of oil on the weight of the ore. The essence of the invention, as he points out above, is that the metal particles shall be coated with a film 'so thin as to be imperceptible to the senses'. It is conceivable that this may happen with a larger proportion of oil in the mixture of oil, water and ore than a fraction of one per cent. of the ore, as in the examples above stated in this brief where claim 9 of the patent in suit is considered (*supra,* p. 55), as where a peculiar gangue might uselessly absorb within its pores a portion of the oil, or where the oil or mixture of oils might have unusual characteristics. For example two oils might be used, one of which would coat the mineral with an attenuated film imperceptible to the senses such as the process requires and effect the result of the process, and the other conceivably perform some other useful function, or be wholly useless and neutral and be used merely to justify the statement that in the aggregate more than a fraction of one per cent. of oil had been added to the mixture. It is against such possibilities, any of which might well arise within the life of the patent in the efforts of infringers to use the invention and avoid the wording of the claims, that the patentees are entitled to claims 9, 10 and 11,

and we contend that in this respect (though in this respect only) Judge Bradford erroneously applied the law to the facts of the case. His discussion of claim 9 presents his views on this question.

Judge Bradford says in substance that claims 1 and 12 'are definite, specifying and limiting the amount of oil to be used,' whereas claim 9 in specifying 'a small quantity of oil' is 'so indefinite as to render the claim void'; this conclusion being based on the assumption that if claim 9, like claims 1 and 12 be by construction 'so limited as to be restricted to the use of oil, the amount being only a fraction of one per cent. on the ore, that claim is in substance * * * the same as claim 1.' Apparently Judge Bradford would by construction have so limited claim 9 had it been the only claim in the patent.

Claim 9, we submit (as well as claims 10 and 11, where the same language is employed), should be construed to save them rather than to destroy them (*ut res magis valeat quam pereat. Corning v. Burden,* 15 How. 269), in spite of the presence of other claims. Limiting words (as of degree) in a claim should be construed in the light of the disclosure made in the specification and in the light of the real invention (*Carnegie Steel Co. v. Cambria Iron Co.,* 185 U. S. 403, 432. Robinson on Patents, Vol. II, p. 507, Sec. 751). So construed, claims 9, 10 and 11 would be limited to that small quantity of oil which is described in the specification and which would in use develop the operation and effect described and would embody the invention. To interpret the term 'small' in these claims loosely enough and broadly enough to bring in and cover and include processes of the prior art which do not involve the real invention, would be contrary to established canons of interpretation repeatedly laid down and applied by this court. Similarly to hold that the word 'small' in this connection is so indefinite that the claims in question are void, would be contrary to established canons of interpretation repeatedly stated and applied by this court. 'Small' in this connection means on a scale on which everything in the prior art was large, small in the sense in which the proportions

set out in the specification are small, small in a sense that will in fact produce the operations and effects described.

Whether or not the phrase 'a small quantity of oil', which is found in claims 9, 10 and 11, would in a proper case be given a slightly broader interpretation than the phrase 'a fraction of one per cent. of oil on the ore' found in other claims, is a question that does not arise in the case at bar, for defendant in the case at bar employed an amount of oil that was at once 'a small quantity of oil' and at the same time 'a fraction of one per cent. of oil on the ore'. Such a question is really a question of construction and scope of claims that does not arise here and is not material here, although it may arise and become material on some future question of infringement—but the question need not be prejudged here *(Carnegie Steel Co. v. Cambria Iron Co., supra)*. The claims in question would not necessarily be identical with claims 1 and 12, as Judge Bradford seemed to think. That again would be a question of construction which does not arise here. Claims 9, 10 and 11 are capable of a construction which distinguishes them from the prior art and which is limited to the real invention and which is infringed by defendant's process. They should therefore be sustained, leaving to future litigation possible refinements of distinction in scope between them and other claims if future developments of the art make such distinctions material or important. No harm can be done to any one by that course. Unknown harm might be done to petitioner by the opposite course."

The circumstances under which the Supreme Court decision was made confirm the understanding of it that we have presented.

Thus the Supreme Court had before it the opinion of the District Court in the Hyde case (207 Fed. 956), wherein the claims of the patent in suit are not construed or limited in the matter of quantity of oil permitted and required in the process, but on the con-

trary the language in that regard is general, and the finding of patentable invention is based upon the finding of fact that a new result in kind had been produced by the patentees. Thus that opinion says (p. 957):

> "The claims are general and particular, all calling for oil and agitation to produce a froth, some defining a range of quantities of oily substance, some likewise of acid, &c."

Again, in comparing Froment (as most relied upon by the defendant) with the process of the patent in suit, the District Court opinion in the Hyde case points out in detail the differences not only in procedure but in result.

For example (p. 959):

> "In Froment it would seem that the metallic particles are floated like the basket of a balloon, while in this, like the very envelope of a balloon."

Again, the opinion quotes from Dr. Liebmann's statement, later adopted by the Supreme Court, that in the process in suit "was produced a result that was never obtained before."

Again, the opinion, comparing Froment's process and that in suit says (p. 960):

> "They are different in ingredients, function of some thereof, combination, manipulation, principle and result. Their points of resemblance only serve to accentuate their difference."

And generally summing up, the opinion says (p. 961):

> "The process in suit is so clearly new that no exhaustive discussion of facts, cases, or law is necessary to distin-

guish it from other processes or to demonstrate its novelty. * * *

To whatever extent the patentees drew from the prior art, as they rightfully could, they took the last and successful step."

Clearly here the fact that a radically new result had been obtained was the basis of the decision, not a mere economy in oil, and there was no effort to prejudge a question that did not there arise, i. e., whether the claims of the patent were to be limited to a foot-rule measurement of oil quantity.

The Supreme Court also had before it for review the opinion of this court in the Hyde case (214 Fed. 100). According to that opinion the pivotal discovery lay in the use of oil in a quantity less than one per cent. The assumption was that the patent and all its claims were limited to the use of that particular quantity of oil. The finding of fact was that in the prior art the same identical result had been obtained in the way of froth concentrate and ore concentration and with equal efficiency; that the patentees' discovery had been merely that a small fraction of one per cent. of oil was sufficient to produce the old result and that that discovery was not invention. This court found that the only material difference between the prior art and the process in suit consisted in the matter of the quantity of oil used.

Thus the opinion of this court says (214 Fed. 102):

"That which is presented as new in the patent, and as the pivotal discovery on which its validity depends, is the formation of a froth or scum containing the metalliferous matter produced by agitation of the pulverized

ore in water, by the action of oil in a quantity less than 1 per cent. of the quantity of ore treated."

Again (p. 104):

"When the claims and the description of the process of the appellees' patent are compared with the patents of the prior art, it will be seen that the only material difference is in the smaller quantity of oil which the appellees use."

Again (p. 105):

"The fact that the appellees use a smaller quantity of oil than was used in the prior art is not of itself, and it is not claimed by them to be, sufficient to distinguish their process so as to render it patentable. To discover that the desired result may be accomplished with the use of a fraction of 1 per cent. of oil when formerly a much larger quantity of oil had been used, and had been deemed necessary, is not an invention or discovery within the meaning of the patent laws. It is a difference of degree and not of kind."

Again (p. 106):

"The contention is made, however, that if, indeed, the prior patents disclose froth processes, the scum which the appellees' process causes to rise to the surface of the water is so different from the froth or scum which arises under the prior art that it is a new result and is not anticipated by anything in the prior art. * * * The evidence in the case, together with the illustration thereof afforded by demonstrations of the various processes which were made in the aid of the argument before this court, convince us that the froth in all these processes is the same, with the exception that there is less oil (as there must necessarily be) in the appellees' froth than in the others. The froths are all similar in appearance; they all rise to the surface after the same amount of agitation; they all gather with equal efficiency the same quantity of metal; and all may be removed from the surface in the same way."

Again (p. 109):

> "The patentees of the appellees' patent made a valuable contribution to the art in discovering the smallest quantity of oil which would produce the desired result. In doing so, they pursued the course which all skillful metallurgists would be expected to pursue. They made a series of experiments to determine how small a quantity of oil could be used successfully. * * * Their discovery that a small fraction of 1 per cent. of oil is sufficient to produce flotation of the metalliferous matter cannot, as we have seen, be made by itself or in a combination the subject of a patent. The appellees cannot take from others the right to use oil economically."

Manifestly the reduction in the quantity of oil used to a microscopic amount was fundamental to, and the sole content of, this conception of the process in suit. In fact, according to this conception, that was all there was to the process. And naturally we find the opinion assuming throughout that the reduction in the quantity of oil must be to a fraction, or perhaps even to "a small fraction of 1 per cent. of oil" to ore.

Judge Bradford, in his opinion in the Miami case (237 Fed. 609) (which was filed on September 29, 1916, and copies of which were handed to the Justices of the Supreme Court at the argument of the Hyde case) assumes throughout (yielding so much to the decision of this court) that the patentability of the process of the patent in suit resides in the use of a fraction of one per cent. of oil on the ore, and that the process only proceeds when a fraction of one per cent. of oil is used.

Thus, in dealing with claim 9, Judge Bradford says (p. 630):

"The patentability of the process of the first patent in suit resides in the use of oil in the extremely minute proportion disclosed in the descriptive portion of the patent to effect separation of froth with its metallic particles from the remainder of the mixture by flotation. The amount there disclosed is not in excess of 'a fraction of one per cent. on the ore' and may be only one-tenth of one per cent. on the ore, or even less."

Judge Bradford did, however, give some consideration to an argument presented by plaintiffs' counsel as follows:

"It is suggested by one of the plaintiff's counsel in his consideration of claim 9, that one for the purpose of securing immunity from the consequences of infringement might use an oil useful in the process, and add to it an oil not useful as applied to his particular ore, and, on being sued for infringement contend, 'I am using 1.1% of oil. I do not infringe. I am using more than a fraction of 1% of oil'. But the existence of this possibility does not, I think, warrant such a construction of claim 9 as is urged; for the disclosure of the patent does not extend to the use of 1.1% of oil, but is limited to a fraction of 1%. If it be assumed, however, that the claims in suit contemplate and require the use of efficient, as distinguished from inefficient, oil, and if in the case suggested an inoperative oil should be used by way of addition to the efficient oil so contemplated and required it might be a question, upon which, however, no opinion is here expressed, whether the addition of the inoperative oil to the efficient oil could be treated as an increment to the amount of oil so contemplated and required, operating as a shield to protect the wrongdoer. But this question would arise in a suit based upon claim 1 or 12, as well as in a suit based upon claim 9, were it proper by construction, in order to save it, to limit 'a small quantity of oil' to a quantity of oil amounting only to a fraction of one per cent. on the ore, and therefore fails to require or justify the suggested limitation of claim 9, without which it must fall" (pp. 630, 631).

As is evident from the above, no question of infringement was presented to Judge Bradford which called for or required a construction of any of the claims as applicable to the use of one per cent. or more of oil. Judge Bradford says that the defendant in its operations had "used the minute proportion of oil mentioned in the first patent in suit" (p. 631), that patent being the patent here in suit.

And nothing in the prior art required so rigid a limitation.

It is to be noted that when Judge Bradford filed his opinion, the decision of this court in the Hyde case was the latest and the most authoritative and an outstanding decision as yet unreversed, and he apparently adopted from that decision the idea it everywhere assumes, namely, that the invention itself and the disclosure of it in the patent in suit consisted in, and must be limited to, the use of a fraction of one per cent. of oil. He differed from this court in his conclusion that that process involved and required invention, agreeing with the District Court in the Hyde case in that matter and for the same reason, namely, that a *new result* had, as he found, in fact been obtained. He followed the District Court in the Hyde case in this latter finding and he followed this court in the limitation of the invention to the use of a fraction of one per cent. of oil on the ore. He did not find in claim 9 a limitation to a fraction of one per cent. of oil or a definite identification of the process by the new result, and he therefore held that claim 9 was indefinite and invalid.

The Supreme Court had these three decisions before it, two for review. It agreed with the two District Courts in finding that a new result had in fact been obtained, reversing the finding of this court in that regard. But while agreeing with the District Court in the Miami case in holding claim 9 invalid, it did so for the sole reason that the patent must be confined

> "to the results obtained" (p. 5)

by the use of oil within the proportions specified in claims 1, 2, 3, 5, 6, 7 and 12.

Thus, by the decision of the Supreme Court, "the question of infringement *was acutely enlarged,*" to quote the language of the Third Circuit Court of Appeals in its decision affirming Judge Bradford, page 11. The reasoning of Judge Bradford's decision made the test of infringement arbitrarily the use of oil in "a fraction of one per cent. on the ore." The Supreme Court, less arbitrarily but more logically and more liberally and acutely enlarging the question of infringement, made the test of infringement "the *results obtained* by the use of oil" "amounting to a fraction of one per cent. on the ore." This was more logical because, "the results obtained" by the patentees having been found to be absolutely new, *the obtaining of those same results* by an alleged infringer *would be conclusive evidence that at least he was not using any process of the prior art. It was more liberal because it made the test functional rather than arbitrary.*

The Supreme Court decision in the matter under discussion was significantly and acutely broader and

more liberal than the decision of the District Court in the Miami case.

The idea that the patent must in any event be limited to a procedure in which a fraction of one per cent. oil to ore is used was, as we have said, first expressed judicially in the opinion of this court in the Hyde case following the ingenious argument of defendant-appellant's counsel there that the sole novelty disclosed in the patent was the use of less than one per cent. of oil. That argument was false. The prior art did not disclose a process wherein there was an air-bubble separation and lift of the mineral particles up through and out of the pulp resulting in an air-bubble froth holding the particles in mechanical suspension above the pulp, as the Supreme Court has held. But the defendant in that case used the identical oil, oleic acid, of the example of the patent, and within the recommended proportions of that example, .02% to .5% on the ore. The defendant in fact used oleic acid in the proportion of .16% on the ore (Vol. 2, p. 166). No question of construction could possibly have arisen in that case calling for the consideration of the applicability of any of the claims to a procedure involving the use of more than a small fraction of one per cent. on the ore. The error that the patent must be limited to a process employing a fraction of one per cent. of oil was perhaps contributed to by the circumstances connected with the making of the invention and the evidence as to the appellees' practice, in both of which it appeared that the best results were obtained when the quantity of oil used was

a very small fraction of one per cent., and perhaps too from the particular example of oil proportion given in the specification of the patent. The idea was adopted, perhaps as a measure of caution, by Judge Bradford in the decision in the Miami case, although again the limitation of the patent in that direction did not arise, for the defendant there, like the defendant in the Hyde case, had used a very small fraction of one per cent. Further, Judge Bradford suggested that a distinction might be made between

> "the use of efficient, as distinguished from inefficient oil" (237 Fed. 631),

but as to this he expressed no opinion. He held claim 9 to be invalid, and *the idea of its invalidity originated with him.* It was not suggested by counsel for the defendant there either in evidence or in argument.

The Supreme Court, in setting out "the process of the patent in suit, *as described and practiced*" (p. 3) says that it

> "consists in the use of an amount of oil which is 'critical', and minute as compared with the amount used in prior processes 'amounting to a fraction of one per cent. on the ore', and in so impregnating with air the mass of ore and water used, &c."

but when it comes to the question of *the interpretation or scope of the patent* in that regard, it says (p. 8):

> "the patent must be confined to *the results obtained* by"

such use of oil.

This explicitly distinguishes between description and practice on the one hand, and the confining of the pat-

ent, that is to say, interpretation of the claims of the patent as a matter of law, on the other hand.

The Circuit Court of Appeals for the Third Circuit, in the Miami case, as we shall show, points out that even in the original experiments of the patentees the new results were to some extent obtained even when more than one per cent. of oil was used, and that court follows the Supreme Court in confining the patent to (and by necessary implication expanding it out to) "the results obtained," namely, the novel results pointed out by both courts and by the patent.

So the authoritative decisions in so far as they relate to the confining or limitation of the claims of the patent in suit, do not limit it to the use of a fraction of one per cent. of oil to ore, but to the specified process characterized and recognized and identified by its novel results, which novel results are set out both by the Supreme Court and by the Circuit Court of Appeals for the Third Circuit.

The opinion of the District Court in the case at bar is fully considered elsewhere in this brief under a separate heading (*supra,* p. 250 et seq.). In it the disclosures of the patent and of the opinion of the Supreme Court are considered at length, and the conclusion is stated that neither the patent nor the decision says that the process depends upon less than one per cent. of oil or is inoperative with one per cent. or more of oil, and the further view is expressed that the Supreme Court in its words of limitation employed the word "use" in "the ordinary sense of *beneficial service.*"

It may be added that there is no present knowledge of the use in beneficial service of one per cent. or more of oil in carrying out the process of the patent in suit.

It is submitted that the above discussion, in so far as it considers the limitations imposed by the Supreme Court decision, is not essential to the question of infringement presented in the case at bar by the recent practice of the appellant since the first of the year, because it is a fact that the quantity of mineral-froth-forming oil that is used is a small fraction of one per cent., and the excess oil that is added is a mask or cover for the real process and has no part in forming the mineral froth, and so is not, in the eyes of the law, the oil of the claims of the patent in suit at all, and is carefully and purposely so selected and so used as not to prevent the proper proceeding of the real process, although, as proved, the results are impaired.

There is another matter which was considered by the court below and is entitled to consideration by this court. It has to do with the matter of agitation —its character and degree. The appellant here employs at a late stage of his process pneumatic agitation—*agitation by air forced into the pulp*—in the final cleaning of its tailings by froth flotation. It is also true, however, that the appellant repeatedly employs at earlier stages of its process, in handling the same pulp, the same identical character of agitation as the appellees employ in practice, and even greater in degree of violence. So also in the Miami case the defendant employed pneumatic agitation in exactly similar apparatus known as Callow cells, preceding it by agi-

tation in other apparatus. In the Miami case the defendant contended that it did not infringe because the agitation that it employed was different in character from, and less in degree than, plaintiff's practice, and that the only invention plaintiff's patentees had made over the art resided in a stated kind and violence of agitation. True defendant there sought also to show that even that kind and violence of agitation was old in the art, but in the alternative it sought to have the court impose upon the patent a limitation to violent mechanical agitation. Indeed, defendant's argument there is exemplified in fruition in the dissenting opinion filed by Judge Buffington which went to the extent of asserting that the patent should not merely be limited to mechanical agitation and mechanical agitation by a Gabbett mixer but even by a particular kind of Gabbett mixer and a particular kind of Gabbett mixer which was not shown in the patent and was in fact never used in the process. Defendant's argument there was that the Supreme Court itself had so defined the invention and limited the patent in the matter of agitation where it said (p. 3):

> "and in so impregnating with air the mass of ore and water used, by agitation—'by beating the air into the mass'—as to cause to rise to the surface of the mass, or pulp, a froth, &c."

And again (top of p. 5):

> "air introduced into the mixture by the agitation which had been resorted to, to mix the oil with the particles of crushed ore, which air, in bubbles, attached itself, &c."

And again (bottom of p. 5):

> "air bubbles introduced into the mixture by an agitation greater than and different from that which had been resorted to before."

We pointed out in reply in the Miami case that all of this was found in the part of the opinion that dealt with the process "as described and practiced" (p. 3) whereas in the concluding part of the opinion, where the only statement as to what "the patent must be confined to" is made—the only part of the opinion having to do in any sense with construction or limitation—no reference is made to this matter of agitation, either its character or its degree. This view has been adopted by the Circuit Court of Appeals for the Third Circuit, in the Miami case, where it is said of the defendant's argument in this regard (p. 12 of that opinion*):

> "defendant misinterprets words of description as words of limitation";

and where, quoting from the Supreme Court the first of the three statements quoted above, the Third Circuit Court of Appeals continues (pp. 12, 13):

> "By this expression the defendant maintains that the Supreme Court did not merely repeat testimony describing and showing how the process was practiced, but used the words as their own, and thereby interpreted the patent and limited its scope to the introduction of air into the pulp 'by beating the air' into the pulp by the specific mechanical means illustratively shown by the drawings of the patent. We do not so interpret this expression.

*The references in this brief to the opinion of the Circuit Court of Appeals of the Third Circuit will be to a copy thereof as printed by us and handed to this court.

In the first place the patent nowhere uses the words 'by beating the air into the mass'. Therefore these words as quoted by the Supreme Court, were not quoted from the patent, but were taken from the testimony of a witness who used them in describing the process as discovered and developed by the patentees. This being so, we do not think these words, as used by the Supreme Court in describing the process, can be construed as a limitation upon the process.

It further appears that the Supreme Court, in distinguishing the process of the patent from processes of other patents relied on as anticipations, found that the lifting force which separates metallic particles of the pulp from other substances resides chiefly 'in the buoyancy of the air bubbles introduced into the mixture *by an agitation greater than and different from that which had been resorted to before*'. By this expression the defendant insists that the court explicitly limited the patent to agitation caused by mechanical means, thereby excluding from its scope such agitation by pneumatic means as was used in part in the defendant's practice. As this expression is susceptible of an entirely different meaning, presently to be considered, we find nothing said by the Supreme Court, which indicates that it limited the agitation of the patent to agitation by mechanical means'' (italics in original).

The Third Circuit Court of Appeals then quotes the concluding part of the opinion, where the statement is made as to what the patent must be confined to, and comments upon it as follows (p. 14):

''We are inclined to the opinion that by this expression the court intended a limitation only upon that one feature of the patent to which the expression was addressed. The District Court had held valid certain claims in which the proportion of oil was described simply as 'a small quantity', and the Supreme Court, in reversing that finding and holding those claims invalid, used the quoted words of limitation in confining the patent to the *results obtained* by the use of oil in the critical proportions of less than 1%.

> From this recital of the litigation as to the invention of the first patent it appears that in construing the claims of the patent we are greatly aided by the opinion of the Supreme Court in being told with authoritative finality that the process involves invention and in being shown in which of its elements invention resides; but it is equally clear that in determining the breadth and scope of the claims, we are without the aid of any adjudication in which their scope has been decided or even considered." (Italics ours.)

The Third Circuit Court of Appeals later on considers the entirely different meaning that the Supreme Court's expression as to agitation is susceptible of.

Certainly the patent in suit cannot be limited to a "beating in" of air into the pulp as contradistinguished from a drawing in or sucking in of air or a forcing in of air; for the apparatus disclosed in the patent in suit (a Gabbett cone mixer without beater arms) will not beat the air in. The Supreme Court must have been speaking of appellees' commercial practice, as it explicitly stated on page 3 of its opinion. Appellees' practice was then and is largely now to employ a propeller form of beater agitator, but that practice did not begin until 1907 or 1908 (Chapman, Vol. 2, pp. 248, 249, Q27). Such a beater agitator is shown at "B" in the drawings of appellees' soluble frothing agent patent No. 962,678, dated June 28, 1910 (Vol. 9, p. 5274).

The Gabbett cone mixer shown at B in Fig. 1 of the drawings of the patent in suit introduces air into the pulp, not by beating it in, but by drawing or sucking it in. It does not even contain the inner ribs on the Gabbett cone shown in the drawings of the Gab-

bett patent (see Judge Buffington's dissenting opinion 244 Fed. 779), as appears from Complainants' Exhibit cone mixer testified to by Mr. Higgins as a reproduction of the cone mixer used by him in the crucial experiments in 1905 at the birth of the invention (Vol. 3, pp. 925, 926, Qs23, 24). Judge Buffington apparently overlooked this exhibit, which was in evidence before him as well as the drawings of the patent in suit.

It is clear, therefore, that the introduction of air by drawing or sucking it into the pulp must be within the process.

The apparatus of Fig. 2 of the patent in suit which is described on page 2, line 103, to page 3, line 34 (and described there, as appellant's expert Dr. Byrnes admitted, as a complete modified procedure commencing with the introduction of the ore into the water and ending with the separation of the froth, and described earlier in the specification as an alternative method for the retreatment of the tailings of the second and third spitzkasten of the apparatus of Fig. 1) introduces the air by forcing it into the pulp by a pressure of 50 to 100 pounds per square inch, sufficient to cause the air to be dissolved to a considerable extent in the pulp, the aeration and agitation being effected by the sudden relief of such pressure so that the air introduced by the pressure forms bubbles throughout the body of the pulp and sweeps to the surface,

> "all metalliferous matter in the form of a froth" (Spec., p. 2, line 115).
>
> "a coherent scum or froth" (Spec., p. 3, line 29).

The patent in suit also discloses a method of distributing oil through an ore pulp and selectively coating the mineral particles with oil, which method requires only gentle agitation (*infra,* p. 35).

It is clear again, therefore, that the process cannot be limited to mechanical agitation or so as to exclude the introduction of air by pressure from without.

Indeed in the very nature of things it is immaterial how the air is introduced into the pulp, so that it be effectively introduced, and introduced into pulp containing a frothing agent, and so that mineral-holding air-froth be in fact thereby produced. The only rational view to take of this matter is that set out in appellees' soluble frothing agent patent No. 962,678, Defendant's Exhibit 218, where it is said (Vol. 9, p. 5275, lines 23-29):

> "a gas is liberated in, generated in, or effectively introduced into the mixture and the ore particles come in contact with the gas and the result is that metallic sulphide particles float to the surface in the form of a froth or scum."

Again the rational view is also well presented by Professors Beach and Taggart, two of appellant's expert witnesses in the present suit, who studied the process of the patent in suit after it had attracted wide attention in the United States, and evolved a theory which Prof. Beach denominates the Beach-Taggart explanation of flotation. Their paper, published in Metallurgical and Chemical Engineering, a mining periodical, of November 1, 1916, after having been presented before the American Institute of Mining

Engineers in September, 1916 (Vol. 6, p. 2996, XQs126-128), gives consideration to the pneumatic cell or air basket type of agitation and aeration and says:

> "*The principles involved in this method are the same as explained in the agitation-froth process. The only difference is in the method of introducing air.* The result of this difference is that the bubbles in the pulp are much larger than in the agitation-froth method; they arrive at the surface less heavily loaded in proportion to their weight. The bubble films are therefore less viscous and the froth less persistent" (Vol. 6, p. 2999, XQs136, 137; p. 3088, XQs 112, 113).

What they refer to as the agitation-froth process as repeatedly appears, is the carrying on of the process in suit with the type of agitation and aeration wherein air is introduced from above by agitation in one vessel and the froth is separated in another vessel.

The fact is that the whole discussion and controversy as to infringement in the Miami case had no basis of fact either in the nature of the invention or in the relation of the prior art to that invention or in the language of the specification or of the claims of the patent in suit. It was based wholly upon a misinterpretation of the language of the Supreme Court in that regard. The Supreme Court was at that point describing a practice, not construing a patent. And in describing that practice its language must be construed in accordance with the actual facts, not contrary to those facts. It is the actual fact that the degree of agitation employed by the patentees in and by the use of the Gabbett mixer at the birth of the invention in suit was identically the same in every respect with the agitation that they had been employ-

ing for the Cattermole process. The same machine was used, the same speed of rotation was used, the pulp was manipulated in identically the same way. There was no doubt of this fact on the face of the Hyde record, as it went up in somewhat abbreviated form to this court and the Supreme Court, but even if that were not so the actual fact has been proved in this case (Higgins, Vol. 8, pp. 4533-4535, Qs. 351-359). Not only was the same identical Gabbett mixer in use in the Spring of 1905 both for the Cattermole process and for the process of the patent in suit, and rotating at identically the same speed, but this was repeated in court at the trial of the present suit in several demonstrations, all in the Gabbett and at about 850 or 900 revolutions per minute. First, the Cattermole process was carried on from beginning to end (Vol. 8, pp. 4526-4529 Qs. 314-328) with a recovery in granules of 93.6% (Vol. 9, p. 5562). Here the amount of oil was rather large because of the fine grinding of the ore and so as to produce large granules, about 15% on the metalliferous mineral and 5% on the ore. Thereafter Mr. Higgins carried on the process of the patent in suit with one-tenth of one per cent. of oleic acid (Vol. 8, pp. 4747, 4748, Qs. 84-86). This produced an excellent mineral froth. Then 3.6% of the same oil was added, making the total oil 3.7% (p. 4749, Q93). The operation was exactly repeated and the result was that the froth was wholly destroyed and granules were formed (Qs.94-96). In order to show that high speed was not injurious to Cattermole granules Mr. Higgins then ran the machine at a speed

of over 1500 revolutions per minute (Q99). The result of the operation was the formation of very good granules, including practically the whole of the mineral (Q100).

The Supreme Court speaks of the Gabbett mixer being speeded up to "from 1000 to 1100 revolutions per minute," putting it in quotation marks. The quotation is taken from the May 3, 1905, report of Sulman and Picard, found at page 450 of the Supreme Court Record, the language quoted being found at the bottom of page 452 and top of page 453 (see Vol. 3, p. 1117, lines 6 and 7 from bottom). Messrs. Sulman and Picard were there starting in to describe, not the details of the original discovery, but the first apparatus in which the process was adapted for *continuous operation.* That is to say, the process as originally discovered and tried out was an intermittent operation. This intermittent operation is described in the Supreme Court Record on pages 451 and 452, down to the last paragraph (see Vol. 3, pp. 1113-1117). Then it is said

> "A very large number of experiments was carried out on this method, *and the process was then tried as a continuous one,"*

and all that follows is a description of the apparatus used in that continuous operation. It was then (and not until then) that the Gabbett mixers were speeded up to 1000 to 1100 revolutions per minute. But the invention had been previously made and completely made. We must, therefore, understand the Supreme Court as referring to this speeding up (from about

900 revolutions per minute to 1000 to 1100 revolutions per minute) as occurring "as the experiments proceeded," as indeed the court expressly says, and not as vital or essential to the process or as a limitation of the patent, which was what the defendant argued in the Miami case.

We understand the Supreme Court, in describing the petitioners-plaintiffs' practice in the matter of agitation, as simply distinguishing that agitation in character and degree from the agitation of the metal-lifting or "surface flotation" processes of the prior art, for example, from the agitation of Elmore and of Froment and of Kirby, none of which produced, or was intended to produce, an air-lift or an air-froth of the character of the process in suit. We believe that the expressions of the Supreme Court in regard to agitation were really intended to be a pointed criticism of the pretended but false demonstrations of Everson, Kirby and Froment made by the respondent-defendant in open court at the time of the argument, and substantially repeating like false demonstrations made in this court at the argument of the Hyde case. For example, the respondent-defendant's pretended demonstration of Kirby was with 25% of alleged kerosene in a square glass jar with a beater agitator revolving at the rate of 1600 revolutions per minute for thirty seconds. The pretended Froment demonstration, with 3.6% of olive oil, was performed in an identical square glass jar and with an identical beater agitator rotating at the rate of 1600 revolutions per minute for one minute and fifty seconds. The pretended Everson

demonstration, with 17% of alleged kerosene, in an identical square glass jar and with a beater agitator rotating at the rate of 1600 revolutions per minute for 30 seconds. In contrast to this plaintiffs-petitioners demonstrated the real Everson invention with a miner's gold washing pan or batea for separating by vanning in the pan after thorough mixing, as demonstrated in the case at bar (Higgins, Vol. 8, pp. 4473, 4474, Qs57-60) but not described in the Hyde Record (or shown to this court), the fact that it was not in the Hyde Record being stated to the Justices at the time, and their special consent obtained for a demonstration outside the record; also Elmore, with his peculiarly gentle agitation as in the Hyde Record (Vol. 2, p. 288, XQ. 125); also Froment in a test tube shaken by hand, as in the Hyde Record (Vol 3, pp. 891, 892); also Kirby, in the actual Kirby apparatus with the Kirby ore, as in the case at bar, the mixer or stirrer having about 160 revolutions per minute in the mixing tank A and about 30 revolutions per minute in the separating tank B (Vol. 8, p. 4494, Q150 et seq.; 188 r. p. m. in mixing tank and 30 r. p. m. in separating tank, p. 4505, Qs209, 210). Here also the demonstration was outside the Hyde Record, so stated, and with the special consent of the court, and had not been given in this court, but like the Everson was a repetition of what had been done at the Miami trial. The demonstrations of the respondent-defendant in the Supreme Court showed an agitation for Kirby, Froment and Everson which were substantially identical in character and degree with one another and with that of

the patentees' process, which latter was demonstrated by the use of .1% of oil in an identical square glass jar and with an identical beater agitator rotated at 1700 revolutions per minute for seven minutes. In the light of the plaintiffs-petitioners' demonstrations and in spite of the respondent-defendant's demonstrations, as we believe, the Supreme Court found the patentees' agitation "greater than and different from that which had been resorted to before"—not to confine the patent to any one character or degree of agitation that would produce an air-lift and an air-froth as contra-distinguished from another degree or character of agitation that would accomplish the same result, but as helping to distinguish from Everson, Froment and Kirby where the purpose was different, where the function and operation were different, where the *results obtained* were different. All of which gives point and meaning to the breadth and scope of the definition that the Supreme Court has given to the invention and to the patent, namely, that the invention is for a raising of the mineral particles through the pulp by an air-bubble lift and the holding and carrying of the mineral particles above the pulp in an air-bubble froth, and that the patent is to be confined to this *operation and result,* but is not to be otherwise confined.

OPINION OF THIRD CIRCUIT COURT OF APPEALS IN THE MIAMI CASE.

This opinion was filed May 24, 1917, the case having been argued on January 30 and 31 and February 1,

2 and 3, 1917. It is reported in 244 Fed. 752, but the references here to the opinion of the court, written by Judge Woolley, will be to the pages in a copy of that opinion handed by us to the court.

At the time of the argument there no disclaimer as to claims 9, 10 and 11 had been filed and accordingly plaintiff's appeal there from the part of the decree below holding claim 9 invalid was abandoned, and that claim was thereby withdrawn from the consideration of the Circuit Court of Appeals (Opinion, p. 4).

This opinion has been to some extent referred to above in the consideration of the decision of the Supreme Court.

As stated above no question of infringement having to do with the amount of oil used arose in the Miami case any more than in the Hyde case, because the defendant used the minute fraction of one per cent. of oil to ore particularly recommended by the patent in the example given in it and the patent was therefore not construed in that regard there. The whole question of infringement there turned on the character and degree of agitation employed by the defendant in that case. Consequently the question as to the quantity of oil involved in the process of the patent and the limitations in that regard, if any, of the claims of the patent was not in issue there and was not discussed there. The Circuit Court of Appeals for the Third Circuit in describing the making of the discovery says (p. 8):

> "In experiments with oil in proportions just under the Cattermole proportion nothing resulted. The Catter-

> mole concentration was lost and no other concentration was obtained. When in the line of experiments, the proportion of oil to ore was reduced to 1.5% a 'float' appeared. At 1.04% still more 'float' appeared. At .32% the 'float vastly increased'. At .10% the float again 'vastly increased'. It thus developed that in using oil at .10% or even at .05% on the ore, and after violently agitating the pulp from two and one-half to ten minutes, there arose to the surface when the pulp was brought to rest a thick froth or foam of oil-coated air bubbles carrying oil-coated metal particles to the extent of about 90% of the metal content, the foam being sufficiently stable to permit removal and metal recoveries.
>
> This was an entirely new result based upon a phenomenon then unknown and still unexplained. It constituted discovery. It was a discovery that promised what has since been accomplished—a change in the art of oil flotation from laboratory experiments and mill failures to commercial success."

The Circuit Court of Appeals for the Third Circuit gives special attention throughout to that part of the decision of the Supreme Court which deals with the character and degree of agitation involved in the process; nevertheless, on page 12, and again on page 14, it points out that the Supreme Court laid down (p. 12) "the very definite limitation of the patent to *the results obtained* by the use of oil within the described proportions &c." (p. 14), "confining the patent to *the results obtained* by the use of oil in the critical proportions of less than 1%."

It points out also, on page 11:

> "It is to be noted and kept in mind that the Supreme Court did not construe the patent or determine its scope, for it had no occasion to do so. In the case before it, infringement was so clear that it had to be found if the patent was valid. The validity of the patent, therefore,

was the only seriously controverted issue before the Supreme Court."

On pages 14, 15 and 16 it says of the patent here in suit:

"The elements of the patent in which invention is found are oil, air and agitation. These were old in the art. * * * But a finding by the Supreme Court that the invention was not anticipated by the old uses and results of these elements is in effect a finding that these elements as used in the process of the patent perform or develop new uses and functions or produce different results. And such we find to be the fact. * * *

Three new uses of old elements are disclosed by the patent, producing a new result. The first relates to oil.

The affinity of oil for metal was known, and though old, was employed in the invention; but that this affinity in a given condition is greatest when its quantity is relatively least or that the affinity increases with the decrease of oil below a given quantity (less than 1%) is the soul of the discovery and was wholly new. But the discovery did not consist of this alone. * * *

The agitation of the patent does several things, old and new. It mixes the oil with the metal of the ore. This is old. Then by its greater intensity and longer duration it stirs the pulp into a froth, developing at once its own new use as a frothing means and still another new function of oil—that of a frothing agent. Both are new.

But froth is made of air as well as oil. Air in bubbles is used for its old function of assisting or escorting metal particles to the surface. But it is also used for the entirely novel purpose of supplying one of the essential elements of froth, froth being the new result intended.

Thus oil is used for its newly discovered characteristics of greater metal affinity when in minute quantity and for its new function as a frothing agent; air for the new purpose of supplying an element of froth; and agitation for its new purpose of bringing the two together and causing them to co-act and produce the new result of a metal-carrying froth. In other words, in so employ-

> ing these old elements for new purposes, the new things which the patentees told the art are that a radical decrease of oil in conjunction with a radical increase of agitation develops to its highest potentiality the known affinity of oil for metal and produces a physical change in the pulp in the form of a froth by which metal recoveries are made possible and commercially profitable. The importance of these disclosures, scientifically and commercially, is manifest."

Thus the Circuit Court of Appeals for the Third Circuit gives emphatic endorsement to the finding of fact that the patentees of the patent in suit have obtained a result never before obtained, and by functions and operations that are novel, and by a process that required invention and is patentable.

The references to a fraction of one per cent. seem to be simply a convenient expression taken from the testimony of witnesses or from the preferred example of the patent or from the prior opinions and were evidently not intended to express a judgment on the question whether or not the disclosures of the patent are so limited or whether or not the claims of the patent as a matter of legal construction should be so limited, for no question in that regard arose there or was discussed or considered.

In so far as the facts in the Miami suit resemble the facts in the case at bar, it is to be noted as above stated that the appellant has recently employed pneumatic cells exactly the same as Callow cells (called air-baskets) for finally cleaning up the tailings in a pulp that has previously been abundantly aerated by

agitation of a high degree of violence, and also has recently employed Janney machines of the mechanical-pneumatic type as the fourth, fifth, sixth and seventh machines in each series of seven so-called pyramid machines. In these Janney mechanical-pneumatic machines the spitzkastens are provided with porous medium false bottoms through which air is discharged into the pulp to assist froth production, the pulp flowing into the spitzkasten directly from the agitating chamber wherein it has been subjected to the intense agitation which characterizes the Janney machine. On the other hand, in all of the other Janney machines of the appellant the agitation in the agitating chamber is solely relied upon to effect the aeration of the pulp and the subsequent froth-flotation in the spitzkasten. Thus the appellant's practice well illustrates, separately and in combination, aeration by agitation and agitation by aeration, each type of machine producing and delivering a mineral froth—carrying on the process of the patent in suit and producing the new results first obtained by the process of the patent in suit.

These examples furnished by the operations of the appellant in the present suit of the use of pneumatic agitation alone in separate Callow machines and of pneumatic agitation combined with mechanical-aerating agitation in Janney pneumatic-mechanical machines, well illustrate the equivalency of mechanical and pneumatic agitation in carrying on the process in suit, and the District Court, with these examples before it and other enlightenment from the present record and prior adjudications, expresses conclusions which well sum up

the essentials of agitation and aeration for the process in suit. The District Court says, after particular consideration of the new scientific evidence (pp. clxxx, clxxxi):

> "From these it is gathered that the mere introduction of particles of air into a liquid does not create bubbles, but that they are created by subsequent agitation, *either applied or self-agitation.* Air particles introduced into pure water are incapable of creating bubbles. The reasons are the surface tension of the water and the lack of viscosity to create a sufficient film about the air particle compel the escape of the air particles into the atmosphere and no bubble is formed. Some soaps and oils possess the quality to lessen this surface tension of water and to give or increase this necessary viscosity. Their addition in appropriate quantities of water enables air particles introduced therein to create bubbles. Rather the meeting and co-action of water, oil and air, creates a film composed of all three, and which surrounds the air particle. This film is more viscous than the mass of the water, and rising to the surface, the tension of which (and of the films) has been reduced by the oil, maintains itself as an air bubble. This quality of oil is of first importance in the process."

Later the District Court says (p. clxxxiii):

> "How the air particles are introduced into the pulp is immaterial. For introduced, they are still particles and not bubbles. Agitation subsequent to introduction is vital and alone can convert air particles into water-oil-air bubbles. It is this subsequent agitation that within the claims of the patent agitates 'the mixture until the oil-coated mineral matter forms into a froth' or 'to form a froth'. And it is all one whether this be applied agitation or self-agitation—the agitation set up by the air particles themselves in merely rising through the mass and thereby coming in contact with both water and oil, all co-acting to form bubbles which capture the metal."

MISINTERPRETATION OF FIGURES IN APPELLANT'S BRIEF.

On page 53 of appellant's brief an effort is made to show by the figures in reports of appellant's operations that very little oil went to waste in the tailings when twenty pounds or more of oil were used per ton of ore. The figures given are of the percentages of oil in the tailings to the tailings themselves. These maximum and minimum figures for regular operations employing one per cent. or more of oil are quite small, .55% to .71%. The corresponding figures for the exhibited operation on April 29, 1917, are given in appellant's brief as .35%, but this is evidently a typographical error, since the figures given in appellant's assay is .67% (Vol. 9, p. 5184). But these figures are altogether deceptive. They only give the oil percentages in these waste products. The question is how much of the oil that was used went to waste in the tailings. This can be easily calculated, since the tonnage of feed and the tonnage of concentrates are given, and the difference between them is the tonnage of the tailings. The percentages of oil in each of these products is also given. These figures show that on February 4-28, when the tailings carried the minimum percentage of oil to tailings, of .55%, they actually carried 41.9% of the oil that had been used, and the oil that they carried was 8.4 lbs. to the ton of feed or ore treated and .42% of the ore treated (i. e., 42 one-hundredths of one per cent. of the ore treated). The oil used was 20.07 lbs. to the ton of ore, 1% of the ore. Of this 20.07 lbs. the tailings carried 8.4 per ton of ore treated.

So also during the period of March 21-31, when the tailings carried the maximum percentage of oil to tailings, .71%, they actually carried 49% (nearly half) of the oil used, and the oil that they carried was 9.2 lbs to the ton of ore treated and .46% of the ore treated.

So also at the exhibited run of April 29, 1917, the oil in the tailings was only .67% of the tailings, but this was 39.2% of the oil used, and the oil carried by the tailings was 10.34 lbs. per ton of ore treated and .52% of the ore treated.

Thus each of these operations was carried on with a very large proportion of the oil useless in the process and wasted in the tailings, and appellant's reports corroborate the testimony of appellees' witnesses that appellant's ore contained abnormal amounts of clay gangue slime which soaked up or absorbed a good part of the oil and made it useless in the process. In fact the actual figures negative the argument here made in appellant's brief.

The illusory figures of appellant's operations are contrasted in appellant's brief (p. 53) with the actual figures of the slide machine tests made by Dr. Chandler in the Hyde case. These tests it may be noted, were not put forward as representing the best practice under the patent in suit, but merely as repetitions of the operations at appellant's mill directed by Hyde. They were part of the evidence of infringement. They show six averaged operations with 3.2 lbs. of oleic acid to the ton of ore, .16% of the ore (Vol. 1, p. 166, Q15). Of this oil 12.7% or .4 lbs. (four-tenths of a pound) to the ton of

ore (p. 161) went to waste in the tailings with .2% of the zinc of the ore (p. 165). But the percentage of oleic acid to the tailings, the figure appellant's brief quotes from appellant's reports and fails to quote from Dr. Chandler's careful and complete tables, was the minute figure of .047%, forty-seven one-thousandths or about five one-hundredths of one per cent.

The actual figures of amounts of original oil found in the concentrates are also instructive and also lead to exactly the opposite conclusion from that asserted in appellant's brief on pages 43 and 53.

During the period, February 4-28, when 20.07 pounds of oil were used per ton of ore treated, 1% of the ore, the concentrates carried 1.86% of oil to concentrates, but this was only 43.8% of the oil used and was only 8.8 lbs. of oil per ton of ore treated or .44% of the ore treated, in fact a small fraction of 1% of the ore treated.

During the period, March 21-31, when 22.86 lbs. of oil were used per ton of ore treated, 1.14% of the ore, the concentrates carried 2.45% of oil to concentrates, but this was only 45.8% of the oil used and was only 10.4 lbs. of oil per ton of ore treated or .52% of the ore treated, in fact a fairly small fraction of 1% of the ore treated.

The joint run of April 29, 1917, was undoubtedly an unusual operation. The low temperature of the water, the floating grease and the discharge to waste of the rich tailings of the second cleaner containing 8.65% of zinc, 173 pounds of zinc to the ton, were all abnormal.

Here the highest percentage of oil appeared in the concentrates, 3.13% of oil to concentrates, which was 54.1% of the oil used and 14.29 lbs. of oil per ton of ore treated and .71% of the ore treated. Thus we find in the concentrates a fairly large proportion of oil to ore treated, but still a fraction of 1% of the ore treated.

All of the above figures are calculated from appellant's reports of tonnage and oil determinations. They all show errors in oil determinations in that the figures do not exactly balance, but this is characteristic of all oil determinations put in evidence by appellant. Probably the soluble frothing agent in the pine oil which goes into solution and stays there helps to explain these errors, and it is also probable that the middlings change their oil content from period to period, and thus vary the total figures which do not discriminate between unused and used oil.

APPELLANT'S BRIEFS IN GENERAL.

Appellant's brief is replete with quoted fragments of the great litigious literature which has been created in the conflicts arising in relation to the invention in suit, and the supplement thereto entitled Plaintiff's Limitations, etc., consists of nothing else except such quotations. The effort has been made to present every statement in testimony and argument in the three litigations in this country which may in any manner when fragmentarily presented create the impression that appellees have asked the courts for a limited construction

of the patent in suit in order that it might be sustained. An example of this is found in appellant's brief at pages 10 to 16. The testimony fragmentarily here presented related to the example of the patent in suit wherein "say from 0.02% to 0.5%" (Spec. p. 1, lines 80, 81) of oleic acid is recommended for use with Broken Hill ore. It so happened that in the Hyde suit and in the Miami suit the total amount of oil used was well within these recommendations, and therefore the only questions at issue in those suits arose out of the use of oil in these minute proportions.

This is followed by quotations from the arguments and briefs of counsel for petitioners-complainants in the Hyde case (appellant's brief, pages 17 to 19) and other quotations are made at pages 33 and 34 of appellant's brief and at pages 139 to 180 of appellant's further brief entitled Plaintiff's Limitations, etc.

The complete and brief argument submitted to the Supreme Court as to what appellant now regards as the crucial point, is not printed in these voluminous excerpts. This was the argument as to claim 9, wherein a question such as has here arisen was to some extent predicted and the court was asked not to prejudge it. Part of this argument appears at page 152 of Plaintiff's Limitations, etc. The other, and what would appear to be the vital part of this argument does not appear, the two fragments at pages 161 and 162 of Plaintiff's Limitations, etc., being altogether incomplete. This part of the argument is reprinted in full herein (*supra*, p. 287, et seq.).

One of the documents quoted in Plaintiff's Limitations, etc., is entitled Printed Oral Arguments on Appeal in this Court. The excerpts appear at pages 133 to 138 of Plaintiff's Limitations, etc. This document was filed by counsel for appellant in the Hyde case without notice to or the knowledge of counsel for appellees therein. The oral arguments were stenographically transcribed and copies sent to counsel for appellees for their corrections, and were exchanged thus corrected with appellant's counsel for the corrected minutes of appellant's counsel, and it was agreed that the corrected minutes were to be filed with the court. In fact, however, appellant's counsel elaborately edited and corrected the stenographer's minutes of their own arguments and printed them with the uncorrected minutes of the arguments of appellees' counsel, and filed them with the court without notice to appellees' counsel. Some two years later, by accident, appellees' counsel received a copy of the printed book which had been thus filed. In so far as it purports to contain the arguments of appellees' counsel it is wholly unreliable, and the quotations which have been made from it are so interspersed with errors that they should be disregarded altogether by this court.

From the corrected stenographer's minutes of the argument of Mr. Williams in this court in the Hyde suit the following may be quoted:

> "The specification here [in claims 9, 10 and 11] of the quantity of oil is a small quantity of oil. It may be possible that in the future somebody will use more than a fraction of 1% of oil *and get the new result which was never obtained before we got it.* Such a thing is a pos-

> sibility. I take it this court does not have to pass upon that future possibility. * * * These claims specify a small quantity of oil" (p. 65).
>
> "This is a brief statement of the claims in issue which distinguish the invention, because in every claim there is a statement of that new operation which brought out *a new result*—which was never known before,—agitating the mixture to form a froth, agitating the mixture to cause the oil-coated mineral to form a froth, agitating the mixture to form a froth. That was the charactistic, striking, new, useful feature of the invention" (p. 66).

It was also asserted, not only that mineral-froth production was new, but also that no prior art documents disclosed processes whereby mineral-froths could be produced. Appellant's surprising experiments misrepresenting the prior art first exhibited to appellees' counsel at the hearing in this court, called forth some surprised utterances from associate counsel for appellees which may not in themselves have indicated that appellant's products of the legerdemain of the laboratory were not in any manner deemed to represent the actual prior art from which the invention was to be distinguished. But Mr. Williams in his argument had already characterized all of these experiments as follows:

> "Appellant takes the refinements of our apparatus and produces laboratory freaks that were never known or heard of or thought of before this invention was discovered" (p. 76).

And as to the appellant's experiment alleged to represent the Froment description:

> "Defendant has introduced some new evidence in the form of a procedure which is not in accordance with the Froment description, but inasmuch as it is new evidence, and new evidence cannot be considered at this time here, I do not give it any further attention" (pp. 95, 96).

And as to appellant's experiment alleged to represent Kirby:

> "Now, the demonstration which was made in court was not Kirby. It was something which was not known when Kirby filed his application. It was something that was not known to us. This phenomenon of producing a froth with greater quantities of oil by careful laboratory manipulation is a discovery of Dr. Byrnes [appellant's expert] and to him we give the credit for it" (p. 102).

Certainly appellees' position in the argument before this court was the same then as it is now. A broad construction of the patent was asked for and appellant's spurious froths were sufficiently characterized as such and not as prior art.

Dated, San Francisco, March 5, 1918.

Respectfully submitted,

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No. 3081.

UNITED STATES CIRCUIT COURT OF APPEALS

FOR THE NINTH CIRCUIT.

MINERALS SEPARATION, Ltd., et al.,
Appellees,

vs.

BUTTE & SUPERIOR MINING COMPANY,
Appellant.

PLAINTIFFS' LIMITATIONS REGARDING THE AGITATION FROTH PATENT 835,120.

THOMAS F. SHERIDAN,
J. EDGAR BULL,
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PATENT IN SUIT.

The Patent in Suit, No. 835,120.

(T. R., Vol. III, page 951):

This invention relates to improvements in the concentration of ores, the object being to separate metalliferous matter, graphite, and the like, from gangue by means of oils, fatty acids, or other substances which have a preferential affinity for metalliferous matter over gangue.

In the process described in the previous United States patent No. 777,273, granted to A. E. Cattermole, an amount of oil varying from four per cent. to six per cent. of the weight of metalliferous matter present is agitated with an ore pulp, so as to form granules which can be separated from the gangue. (Lines 9-22.)

We have found that if the proportion of oily substance be considerably reduced—say to a fraction of one per cent. on the ore—granulation ceases to take place, and after vigorous agitation there is a tendency for a part of the oil-coated metalliferous matter to rise to the surface of the pulp in the form of a froth or scum. This tendency is dependent on a number of factors. Thus the water in which the oiling is effected is preferably slightly acidified by adding, say, a fraction of one per cent. up to one per cent. of sulfuric acid or other mineral acid or acid salt, the effect of this acidity being to prevent gangue from being coated with oily substance, or, in other words, to render the selective action of the oil more marked; but it is to be understood that the object of using acid in the pulp according to this invention is not to bring about the generation of gas for the purpose of flotation thereby, and

the proportion of acid used is insufficient to cause chemical action on the metalliferous minerals present. Again, we have discovered that the tendency for the oily substance to disseminate through the pulp and the rapidity with which the metalliferous matter becomes coated is increased if the pulp is warmed. The formation of froth is assisted by the fine pulverization of the ore, and we find that slime mineral most readily generates scum and rises to the surface, while larger particles have less tendency to be included in the froth. The proportion of mineral which floats in the form of froth varies considerably with different ores and with different oily substances. . . . (Lines 28-64.)

The following is an example of the application of this invention to the concentration of a particular ore. An ore containing ferruginous blende, galena, and gangue consisting of quartz, rhodonite, and garnet is finely powdered and mixed with water containing a fraction of one per cent. or up to one per cent. of a mineral acid or acid salt, conveniently sulfuric acid or mine or other waters containing ferric sulfate. To this is added a very small proportion of oleic acid (say from 0.02 per cent. to 0.5 per cent. on the weight of ore). (Lines 70-82.)

The minimum amount of oleic acid which can be used to effect the flotation of the mineral in the form of froth may be under 0.1 per cent. of the ore; but this proportion has been found suitable and economical. (Lines 96-101.)

(Page 953):

1. The herein-described process of concentrating ores which consists in mixing the powdered ore with water, adding a small proportion of an oily liquid having a preferential affinity for metalliferous matter (amounting to a fraction of one per cent. on the ore),

agitating the mixture until the oil-coated mineral matter forms into a froth, and separating the froth from the remainder by flotation.

2. The herein-described process of concentrating ores which consists in mixing the powdered ore with slightly acidified water, adding a small proportion of an oily liquid having a preferential affinity for metalliferous matter (amounting to a fraction of one per cent. on the ore), agitating the mixture until the oil-coated mineral matter forms into a froth and separating the froth from the remainder by flotation.

3. The herein-described process of concentrating ores which consists in mixing the powdered ore with slightly-acidified water, adding a small proportion of an oily liquid having a preferential affinity for metalliferous matter (amounting to a fraction of one per cent. on the ore), warming the mixture, agitating the mixture until the oil-coated mineral matter forms into a froth and separating the froth from the remainder by flotation.

5. The herein-described process of concentrating ores which consists in mixing the powdered ore with water, adding a small proportion of oleic acid amounting to 0.02-0.5 per cent. on the ore, agitating the mixture until the oleic acid has been brought into efficient contact with the mineral and has formed a froth therewith, and separating the froth from the remainder by flotation.

6. The herein-described process of concentrating ores which consists in mixing the powdered ore with water containing a fraction of one per cent. of sulfuric acid, adding a small proportion of oleic acid amounting to 0.02-0.5 per cent. on the ore, agitating the mixture until the oleic acid has been brought into efficient contact with the mineral and has formed a froth therewith, and separating the froth from the remainder by flotation.

7. The herein-described process of concentrating ores which consists in mixing the powdered ore with water containing a fraction of one per cent. of sulfuric acid, adding a small proportion of oleic acid amounting to 0.02-0.5 per cent. on the ore, warming the mixture to 30°-40° Centigrade, agitating the mixture until the oleic acid has been brought into efficient contact with the mineral and has formed a froth therewith, and separating the froth from the remainder by flotation.

9. The process of concentrating powdered ores which consists in separating the mineral from the gangue by coating the mineral with oil in water containing a small quantity of oil, agitating the mixture to form a froth, and separating the froth.

10. The process of concentrating powdered ores which consists in separating the mineral from the gangue by coating the mineral with oil in water containing a small quantity of oil, warming the mixture, agitating the mixture to form a froth, and separating the froth.

11. The process of concentrating powdered ores, which consists in separating the mineral from the gangue by coating the mineral with oil in water containing a small quantity of oil and a quantity of acid insufficient to cause chemical action on the metalliferous minerals present, agitating the mixture to form a froth, and separating the froth.

12. The process of concentrating powdered ore which consists in separating the minerals from gangue by coating the minerals with oil in water containing a fraction of one per cent. of oil on the ore, agitating the mixture to cause the oil-coated mineral to form a froth, and separating the froth from the remainder of the mixture.

Disclaimer.

(T. R., Vol. 1, pages cxv-cxvii):

UNITED STATES PATENT OFFICE.

Hon. Commissioner of Patents,

Sir:

Your Petitioner, Minerals Separation, Limited, a corporation organized and existing under the laws of Great Britain and having its principal place of business in London, England, hereby represents as follows:

1. That on November 6th, 1906, letters patent of the United States for Ore Concentration, No. 835,120, were granted to Henry Livingstone Sulman, Hugh Fitzalis Kirkpatrick-Picard and John Ballot, of London, England, and your petitioner is now the sole and exclusive owner of the said letters patent.

2. That by the decision of the Supreme Court of the United States in *Minerals Separation, Limited, and Minerals Separation, American Syndicate, Limited,* v. *James M. Hyde,* filed the 11th day of December, 1916, your petitioner is advised that the said letters patent No. 835,120, in so far as concerns claims 9, 10 and 11 thereof, covers and includes more than the said inventors had a right to claim as new.

3. That the matter which the said patentees and your petitioners are, in accordance with the said decision of the said court, not entitled to hold or claim by virtue of said claims 9, 10 and 11 of said letters patent No. 835,120 was included therein by mistake, and without fraudulent or deceptive intent, and without any wilful default or intent to defraud or mislead the public.

4. That the subject-matter not herein and hereby disclaimed is definitely distinguishable from the part

or parts disclaimed herein, and is truly and justly the invention of the said Henry Livingstone Sulman, Hugh Fitzalis Kirkpatrick-Picard and John Ballot, and is a material and substantial part of the thing patented.

Your petitioner, therefore, for the purpose of complying with the requirements of the law in such case made and provided, and of disclaiming those parts of the thing patented which your petitioner does not choose to claim or hold by virtue of said letters patent No. 835,120, does hereby disclaim from claims 9, 10 and 11 of said letters patent No. 835,120, any process of concentrating powdered ores excepting where the results obtained are the results obtained by the use of oil in a quantity amounting to a fraction of one per cent. on the ore.

In witness whereof your petitioner has caused these presents to be signed and sealed by John Ballot, its duly constituted attorney in fact under and by virtue of a power of attorney dated December 14, 1915, and recorded in the United States Patent Office November 27, 1916, in Liber K 101, page 176 of Transfers of Patents, this 27th day of March, 1917.

MINERALS SEPARATION, LIMITED,
By JOHN BALLOT (L. S.),
Attorney in Fact.

In presence of
S. GREGORY,
HENRY D. WILLIAMS.

State of New York, County of New York, ss.

On this 27th day of March, 1917, before me personally came John Ballot, attorney in fact of Minerals Separation, Limited, a company organized under the laws of Great Britian, to me personally known, and

known to me to be the individual described in and who, as such attorney, executed the within petition and acknowledged that he executed the same as the act and deed of Minerals Separation, Limited, therein described, by virtue of a power of attorney duly executed by said Minerals Separation, Limited, bearing date December 14, 1915, which power of attorney was exhibited to me, and he stated that it was still in force and effect.

(Seal) HARRY C. LEWIS,
Notary Public, Bronx Co., No. 12.
Certificate filed in New York County, No. 41.

File-Wrapper and Contents of Patent in Suit, No. 835,120.

(Vol. IV, page 1974):

The following claim was presented in amendment received by the Patent Office April 18, 1906 (See Vol. IV, page 1996):

> "12. The process of concentrating powdered ore, which consists in separating the minerals from gangue by coating the minerals with oil in water containing a fraction of 1% of oil on the ore, and recovering the oil coated minerals."

This claim was rejected by the Examiners of the Patent Office in charge of this application under date of June 18, 1906, as follows:

(Page 2004):

Case as amended June 15, 1906, further considered.

Claim 12 is rejected in view of 763,260, Cattermole, June 21, 1904; or 793,808, Sulman *et al.*, July 4, 1905, Washers (H), as expressing merely a difference of degree thereover as to the proportion of oily matter employed.

LEWIS B. WYNNE,
Examiner,
Div. XXV.

T. F. MITCHELL.

THE AGITATION FROTH PATENT.

CHARACTERISTICS BY WHICH THE INVENTION MAY BE IDENTIFIED, AND THE LIMITS THEREOF.

COMPLAINANTS' PROOFS.

Edward H. Nutter.

(T. R., Vol. II, pages 50-51):

40 X-Q. Please describe the steps constituting this process which you term the "agitation froth process."

A. You mean the steps necessary in using this process, I assume. The steps are not always the same nor always taken in the same order on all ores. In the application of the agitation froth process to such an ore as that of the Butte & Superior Copper Company, the steps would consist of agitating an ore pulp consisting of finely ground or comminuted ore mixed with water, which had been acidulated with sulphuric acid and to which had been added a small quantity less than one per cent., of what we usually term an oily re-agent, of which oleic acid is an example. This mixture is agitated with considerable vigor so that, when the agitated pulp is allowed to flow into a separating chamber or spitzkasten, the sulphide mineral contained in the ore rises to the surface of the water in the separating chamber as a froth, which is or can be flowed off and collected and which forms the valuable concentrate. These steps are repeated until the required extraction of the valuable ore constituents from the ore pulp has been obtained, when the tailings are allowed to go to waste, or, if desired for reasons of economy, they are first dewatered. All of these steps form a continuous treatment of the ore pulp as it flows through the apparatus.

(Page 61):

69 X-Q. About what quantity of oily matter or oleic acid relative to the weight of the ore have you seen used in the application of the process which you have called the Minerals Separation process?

A. The quantity used varies with different ores, and with different oily re-agents. Usually a few pounds of oily re-agent at the outside, per ton of ore, is sufficient to give the desired results.

70 X-Q. What are the maximum and minimum limits which you intend to indicate by the expression "a few pounds of oily reagent" per ton of ore?

A. Good results on an ore are usually obtainable with less than ten pounds of oily re-agent, per ton of ore.

(Pages 68-69):

99 X-Q. In froth flotation processes of the general type referred to by you as the Minerals Separation process, does any unfavorable result occur if a comparatively large amount of oil is used, say a hundred pounds to the ton of ore?

A. My observations have been that when such a quantity of oil as this is used, that the resultant effect ceases to be accurately described as a froth flotation process, as a different set of phenomena are apt to come into play.

100 X-Q. Will you describe these other phenomena which you refer to, which are incident, as you say, to the use of a large amount of oil?

A. I have not seen, except with small scale experiments, any such amount of oil as you describe used. In some small scale tests I have seen, where a quantity considerably in excess of the amount used to produce frothing was tried, though I am not sure nor do I recollect

whether the quantity was such as you indicate, the effect was to gather the valuable mineral of the ore into granules, which remained at the bottom of the vessel in which the experiment was tried.

(Page 71):

106 X-Q. What differences in mode of procedure cause the Cattermole effect of precipitation to be obtained under some circumstances and flotation of the larger part of the concentrate under other circumstances?

A. I really am not qualified to testify on this point, as I have seen so little of the Cattermole process. It is my understanding, however, that the chief difference in the results is brought about by the difference in the quantity of oil used.

(Page 74):

119 X-Q. Then what would you do?

A. I would alter the adjustment of operations step by step until I found a condition wherein these granules were not discharged with the tailings.

120 X-Q. What particular adjustment would you think of altering first?

A. There are several adjustments which might occur to anyone skilled in the art and which would, I think, occur to me. One of them would be to alter the rate of flow of pulp through the plant. Another would be to alter the speed of agitation. Another would be to alter the quantity or kind of oil used on the particular ore being treated. Another might be to alter the dilution of the solution circuit with reference to dissolved salts therein. Another might be to alter the temperature of the solution circuit. Another might be to vary the internal arrangement of baffles or other diverting devices so as to affect the direction of flow of the ore pulp. All

of these adjustments might have some effect or considerable effect, or any of them might have effect upon the formation of the agglomerations which I have described.

(Page 76):

126 X-Q. State some particular case and give us the rule for the correction of the agglomeration and settling effect.

A. In an ore containing zinc sulphide and gangue mineral, in which it was found to be necessary to use for the treatment by flotation thereof to give the best commercial results, a mixture of finely ground ore, water heated above the atmospheric temperature, sulphuric acid and oleic acid, if it should be found that adjustment of the other elements which I have previously described did not produce sufficient diminution of this agglomerating effect, and if it had been found that all or most of the mineral occurring in the ore could be floated as a concentrate froth and was not doing so, I would expect, if the quantity of oleic acid used was in excess of the usual amount found necessary in the treatment of such ores, that a diminution of the quantity of oleic acid would reduce this agglomerating effect, and I would lay down a rule, then, that such quantity be reduced under these conditions.

Dr. Charles F. Chandler.

Complainants' expert witness testified as follows (T. R., Vol. II, pages 137-139):

Before beginning to describe the nature of their invention, the patentees refer to the Cattermole granulation process, in which oily matters were employed in ore concentration in a manner totally different from that of the patent in suit. I cannot do better than quote from the specification, as follows:

> "In the process described in the previous United States patent, No. 777,273, granted to A. E. Cattermole, an amount of oil varying from four per cent. to six per cent. of the weight of metalliferous matter present is agitated with an ore pulp, so as to form granules which can be separated from the gangue. In the previous United States patent, No. 777,274, granted to A. E. Cattermole and others, a similar method of separation is employed, oleic acid being produced *in situ* in the ore pulp."

Without going into details I would state that in both these patents so large an amount of oily matter is employed as to agglomerate together the metalliferous matter contained in the ore into granules or pellets of substantial size, but at the same time the amount of oily matter is not sufficient to float the metalliferous matter, but, on the contrary, the pellets, owing to the specific gravity of the metalliferous matter, are so heavy they remain at the bottom of the vessel containing the pulp, even when an up-current of water is employed, while the non-metalliferous matter or gangue, while being considerably heavier than water, are nevertheless carried up through the liquid and discharged over the upper edge of the vessel, the result being a comparatively complete separation of the metalliferous matter, which passes away with the upward current of water.

The patentees then go on to explain the nature of their invention. They make the following statements:

> "We have found that if the proportion of oily substance be considerably reduced—say to a fraction of one per cent. on the ore—granulation ceases to take place, and after vigorous agitation there is a tendency for a part of the oil-coated metalliferous matter to rise to the surface of the pulp in the form of a froth or scum."

This discovery is the foundation of the invention described and claimed in this patent. The patentees then go on to describe the peculiarities of the process which they have devised, making the following statement:

> "This tendency is dependent on a number of factors."

(Page 141):

The oily matter which they recommend in this case is oleic acid in very small proportions from 0.02 per cent. to 0.5 per cent. on the weight of the ore; reducing these quantities to pounds of oleic acid per ton of 2,000 pounds of ore, I find that 0.02 per cent. of oleic acid is four-tenths of one pound or less than six and one-half ounces to the ton, while 0.5 per cent. is ten pounds to the ton of ore of oleic acid.

(Page 142). They then state:

> "The minimum amount of oleic acid which can be used to effect the flotation of the mineral in the form of froth may be under 0.1 per cent. of the ore; but this proportion has been found suitable and economical."

0.1 per cent. of the ore is two pounds of oleic acid to the ton of 2,000 pounds of ore, that being the ton usually employed in the United States.

(Pages 175-176):

27 X-Q. Is it your understanding that, in the treatment of any selected material, such as that in evidence as Feed to Flotation Plant, there is some definite point in the quantity of oil used at which a transition takes place between the effects described in the Cattermole patents referred to in the patent in suit and the effect of flotation for which the process of the patent in suit is described as being useful?

A. I am sure I don't know any exact point of demarcation. Cattermole describes a process in which he used five or six per cent. of oil and so manipulates his material as to cause the metalliferous constituent of the ore to form heavy granules which settle to the bottom, while the non-metalliferous material or ganue is floated off the top or carried off by the current. In the patent in suit, by the use of a fraction of one per cent. of oil and brisk agitation in water, the metalliferous constituent of the ore is floated off at the top as a froth, while the non-metalliferous mineral, the gangue, settles to the bottom. Not only is there an absolute and radical difference in the amount of oil employed, but there is also a radical difference in the mode in which the oil is applied to the ore. There is no object in the Cattermole process of agitating his material so as to produce froth and send his metalliferous mineral to the surface. That is just what he does not want to do. On the other hand, in the patent in suit there is no object in so manipulating materials as to cause the metalliferous material to remain at the bottom. That is just what the patentees do not want to do. So that if either the patentees of the patent in suit or Cattermole so varied their processes that either would produce the results described by the other, he would cease to be carrying out his own process.

(Pages 176-177):

30 X-Q. I invite your attention to the passage extending from line 31 to line 35, page 1 of the patent in suit, in which it is stated that part of the oil-coated metalliferous matter rises to the surface, and ask what becomes of the remainder of the oil-coated metalliferous matter?

A. It remains in the tailings. I have found in all my experiments that I failed to bring to the surface all of the metalliferous mineral; particles of it were left distributed in the gangue, but they were never in the form of granules. They were always as isolated particles, having for some reason failed to be carried to the surface.

(Pages 177-178):

33 X-Q. In lines 64-69, page 1 of the patent in suit, reference is made to a preliminary test to determine which oily substance yields the proportion of froth or scum desired. In your judgment, just what proportion of froth or scum is it desirable to secure in practicing the process of the patent in suit?

A. The object of applying the process of the patent in suit is to separate the valuable metalliferous particles from the worthless gangue particles, and it is desirable to get out the largest possible percentage of the metalliferous particles. The patentees have found evidently from their statement, to which you refer, that working the different ores, one oily substance may be more efficient in accomplishing the desired result with a particular ore than another oily material. If, therefore, one had a new ore to operate upon, he would naturally test that ore with the different oils at his command, using them in varying proportions, until he found which oily material and which proportion gave him the best results, as it would naturally be his desire in each case to secure the best results.

(Pages 180-181):

39 X-Q. In treating an ore containing eight per cent. of zinc in the form of blende and the remainder of the ore consisting of non-metalliferous gangue, what would be the maximum and the minimum amounts of oil per ton of ore to be used according to the directions appearing in lines 72-79, page 2 of Cattermole patent No. 777,273?

A. 9½ lbs. is the minimum and 14¼ lbs. is the maximum.

40 X-Q. Will you please state what percentage of the amount of ore figured as a whole these quantities of oil named in your last answer represent?

A. Reckoned in percentages, the minimum is 0.48 per cent. and the maximum is 0.71 per cent.

(Pages 181-183):

42 X-Q. In treating an ore containing eight per cent. of zinc as blende and the remainder consisting of non-metalliferous gangue, what would be the maximum and the minimum amounts of oil per ton of ore to be used according to the instructions appearing in lines 28-30, page 1 of patent No. 835,120, this being the patent in suit? Will you also apply the same question to an ore containing four per cent. of zinc in the form of blende?

A. The patent in suit, as I understand it, does not specify any particular quantity of oil with regard to the percentage of zinc present in the ore. The specification simply gives general indications of possible quantities that might be found useful. In lines 28-30, to which you refer in your question, no specific quantity is mentioned. The inventors simply state, referring to the Cattermole patent which has just been previously discussed, that four to six per cent. of the weight of metalliferous matter present is employed; that they have

found that if the proportion of oily substance be considerably reduced, say, to a fraction of one per cent. on the ore, granulation ceases to take place. What this fraction of one per cent. is, they do not mention. The only way in which I can interpret this fraction of one per cent. is by referring to other portions of the specification, where this fraction of one per cent. is expressed in figures; for example at line 81, of page 1, of the specification is the following statement, speaking of the ore:

> "To this is added a very small proportion of oleic acid (say from 0.02 per cent. to 0.5 per cent. on the weight of the ore)."

That is, from 1/50 of one per cent. up to one-half of one per cent. The specification does not intimate that these proportions of oil or oleic acid are to be used indiscriminately on the ores. Special directions are given for preliminary tests with different ores and different oils. Consequently it does not follow from the specification that the maximum quantity of oleic acid mentioned would be used on four per cent. or eight per cent. ores. On the contrary, it is especially stated, beginning at line 96 on page 1 of the specification:

> "The minimum amount of oleic acid which can be used to effect the flotation of the mineral in the form of froth may be under 0.1% of the ore, but this proportion has been found suitable and economical."

(Pages 183-184):

43 X-Q. We will refer again to lines 28-30, page 1, of the specification of the patent in suit, and in connection therewith I would like you to state whether 9/10 of one per cent. is not "a fraction of one per cent."

A. It certainly is, but the paragraph does not indicate that that is the fraction that the inventors refer to. We have to seek further information in the specification to

ascertain what particular fraction they are referring to by the expression "a fraction of one per cent."

(Pages 184-185-186):

46 X-Q. You have stated in discussing lines 28-30, page 1, of the patent in suit that it is necessary to seek further information in the specification of that patent to ascertain what particular fraction of one per cent. of oil is referred to. Will you kindly point out in this patent any passage definitely setting forth any particular fraction of one per cent. that is applicable to the treatment of ores generally?

A. I will examine the specification in its entirety and see what I can find. The first reference to any proportion of oily substance is found in the lines which you have referred to on page 1, lines 28-30. That paragraph, however, is not a statement of any particular quantity which the patentees recommend. It is simply a statement of a discovery which the patentees have made. The first definite statement which I find as to quantity of oily matter is given on page 1, line 81, after the patentees have stated the desirability of simple preliminary tests. At line 81, the patentees say:

> "To this is added a very small proportion of oleic acid (say, from 0.02 per cent. to 0.5 per cent. on the weight of the ore)."

These extremes represent from .4 of a pound per ton of ore to 10 pounds per ton of ore. The patentees do not state on what particular condition of the ore this variation of quantity depends, whether it depends upon the percentage of zinc in the ore or some other quality, but they do indicate that the selection of quantity between these extremes must rest with the person familiar with the art who practices the process, and it is fair to assume that such person would decide how much oleic acid

to use by the results of the simple preliminary tests suggested by the patentees.

The next place in the specification where I find a reference to the proportion of oleic or oily matter is at line 99 on page 1, where I find the following statement:

> "The minimum amount of oleic acid which can be used to effect the flotation of the mineral in the form of froth may be under 0.1 per cent. of the ore; but this proportion has been found suitable and economical."

0.1 per cent. of the ore is two pounds to the ton.

And further I notice that in all of the claims in suit the amount of oily liquid is specified either as a fraction of one per cent., as in claims 1, 2, 3 and 12, or as a small quantity, in claims 9, 10 and 11, or in a percentage in the case of oleic acid .02 to .50 per cent. in claims 5, 6 and 7.

(Pages 187-188):

48 X-Q. The teaching of the patent, as I understand you, consists in directions to perform experiments with different amounts of oil and acid until that amount is hit upon which produces a froth, and then adopting that amount, and that the determination of what is intended to be included within this patent is defined by a result as distinguished from any definition of means to secure such result. Is this correct?

A. As I understand it, the object of this invention as described in the specification and claims is to extract as completely as practicable the valuable metallic minerals from the ore.

This result is to be accomplished in a certain way, which is described and claimed in the patent, that is, by agitating the ore in extremely fine powder in water which is slightly acidulated and to which a minute quantity of oily matter is added, these additions and the

character of the agitation being such as to cause the metalliferous particles to come to the surface as a froth, while the worthless gangue minerals remain at the bottom of the vessel. Now it is self-evident that no two ores are exactly alike, either in the nature of their metallic minerals or in the percentage, and it is equally self-evident that, that being the case, no hard and fast rule can be laid down for all cases as to the quantities of acid or oily matter to be employed. All that the inventors can say in their specification and claims is the statement as to about how much, in general, acid and oil they have found to accomplish the desired results on ores containing metalliferous minerals.

I don't think your question correctly expresses the teaching of the patent. It is not merely necessary to "produce a froth." One might produce a froth and not get out half the valuable material in the ore. Anyone skilled in the art would understand that he must conduct his preliminary tests until he has ascertained the amount of oil and acid which this particular ore requires for its successful working by the process of this patent. This process does not merely consist in adding oil and acid to the water containing the pulverized ore, but it consists in agitating, agitating it briskly, as the specification says, and agitating it so as to produce a froth which shall contain the valuable metallic minerals of the ore.

(Pages 189-190):

49 X-Q. In following out the directions of the patent in suit, do you find anything in that patent to define the amount of oil to be used other than the results secured by using different amounts of oil, such results taking into account not only the production of a froth, but the amount of valuable mineral carried by the froth, as you have suggested?

A. I find on page 1 of the patent, beginning at line 96, the following statement, which I have already quoted:

> "The minimum amount of oleic acid which can be used to effect the flotation of the mineral in the form of froth may be under 0.1 per cent. of the ore; but this proportion has been found suitable and economical."

This paragraph certainly contains a direction defining the amount of oil which the patentees find to be suitable and economical. In another place they have intimated that the quantity is not necessarily fixed for all ores and that the person skilled in the art practicing the process should make preliminary tests or, at least, may make them, with his particular ore, to discover, if possible, a more suitable proportion than 0.1 per cent. or under. I am trying to see what else your question calls for in the way of an answer. You ask me, "do you find anything in that patent to define the amount of oil to be used other than the results secured by using different amounts of oil?" I think the last three words in my quotation from the patent cover everything that is possible, where, in speaking of the proportions to be used, he uses the words "suitable and economical." Necessarily the proportion suitable is the proportion that will cause the largest possible percentage of the valuable metallic minerals to rise in the form of froth, while the largest possible percentage of worthless gangue remains at the bottom of the vessel.

And "economical" naturally refers to costs, which would mean the oil or its equivalent and the proportion thereof which accomplished the desired result at the least expense. I don't mean to say that I find in the specification that it is anywhere stated that one must select the oily matter and determine the proportion thereof which will be most efficient and least ex-

pensive. Anyone skilled in the art would read them into any patent. The object of every patented process is to accomplish a result for commercial purposes, and such considerations are always understood.

(Pages 207, 208, 209):

78 X-Q. Will you explain the distinction as to the quantity of oil or oily liquid used between those of the claims of the patent in suit which specify a fraction of one per cent. as the amount of oil or oily liquid, those which specify a small quantity, and those which specify .02 to .5 per cent. on the ore as the quantity of oily matter or oil?

A. The object in employing oily matter in the process of the patent in suit is clearly set forth in the specification. It is further clearly stated that, while a great variety of oils and oily substances may be employed successfully, there is a choice among these oily materials which depends upon the character of the ore, and the inventors direct that a simple preliminary test should be made to determine which oily substance is suitable to carry out the process with any particular ore. When the patentees specify, either in the specification or claims 1, 2, 3 and 12, a fraction of one per cent. of oily matter, they speak of it in the first three of those claims as oily liquid, and in the twelfth claim as oil, thus providing for a sufficient quantity of any oily substance suitable for carrying out the process of the patent.

In claims 9, 10 and 11 no maximum figure is given for the amount of oil to be employed. The expression is simply "a small quantity of oil," which, as I understand the language of patent literature, would mean a quantity small enough to accomplish the result described and claimed in the patent, the specification of which

clearly indicates that, although the quantity may be variable, it is somewhere about one per cent. or under.

The patentees have selected as the oil to be used in their example oleic acid, and claims 5, 6 and 7 mention this particular oily substance and also mention a proportion which may vary from 0.02 to 0.50 per cent., having evidently found that this is a sufficient margin of variation in quantity, and, referring to the specification, I note that they state, in speaking of the particular ore which they select for their example, line 96, page 1:

> "The minimum amount of oleic acid which can be used to effect the flotation of the minerals in the form of froth may be under 0.1 per cent. of the ore; but this proportion has been found suitable and economical."

79 X-Q. I invite your attention to claims 1 and 9 of the patent in suit and ask you whether the expression "a fraction of one per cent. on the ore," appearing in claim 1, has the same significance as the expression "a small quantity," appearing in claim 9?

A. As a layman and with great diffidence I answer your question by saying that, as I understand the difference in those two expressions, claim 1 limits the amount of oil to a fraction of one per cent. on the ore substantially, while claim 9 limits the quantity of oil not to any particular percentage, but to such a small quantity as will produce the desired froth, which is necessarily variable with different oils and different ores, and may in some cases exceed one per cent.

(Page 212, answer to 84 X-Q.):

I notice, on comparing these two claims, that claim 10 is a claim in which "a small quantity of oil" is directed with no reference to any special oil, and the exact degree of warming is not specified. The claim is

general, for any oil, and the warming could be varied to suit the oil and the ore. Claim 7, however, is an oleic acid claim, and here a specific temperature is mentioned, namely 30°-40° Centigrade, which is equivalent to 86°-104° Fahrenheit, the patentees having probably found that this is a suitable temperature with oleic acid; so this is a more specific claim.

George A. Chapman.

(T. R., Vol. II, page 245):

22 Q. And after these adjustment runs was it put to work treating ore, and, if so, for how long?

A. We started the plant on dump tailings, and treatment proceeded along the Cattermole line for but a few days. The oil consumption alarmed our clients, and I was instructed to use every endeavor to bring this down. This was only possible to the extent of .8 per cent. on the weight of the ore. The formation of good shotty granules was impossible under these conditions, mineral flocks being formed, and these readily separated on the skin flotation table on the lines in which I had been instructed by Messrs. Sulman, Picard and Ballot previous to my departure for Australia. These trials took considerable time, and it was a few weeks before this best condition was reached. The plant proceeded to run on these lines.

(Pages 263-264):

51 Q. You have said it is part of your work to carry out tests on ores. Please describe the manner in which you customarily test an ore for the purpose of determining whether or not it can be successfully treated by the agitation-froth process.

A. The ore to be tested is suitably powdered or pulverized. I usually use the Sulman & Picard slide machine, sometimes known as a "shear-mixer." Into this slide machine I place sixteen hundred grammes of water and in it place four hundred grammes of the ore to be tested. I add acid to equal twenty pounds per ton of ore to be tested and note the effect of such an addition. If a violent evolution of CO_2 takes place I know that calcite is present in the ore in disturbing quantities.

By disturbing quantities I mean that the ore would require large quantities of acid in the treatment, and for economy's sake I abandon the test and use certain acid salts, such as are advised in the patent in suit. The choice of oil for treatment is decided by the locality of the mine, and if possible I use an oil that is locally produced and is as cheap as possible. Having settled upon the acid condition I add roughly one and a half pounds of oil per ton of ore and agitate vigorously for about two minutes. The machine is stopped and the contents of the slide-machine examined. If a good coherent froth is not formed I know that I have to make some slight modification in the reagents used. To any one well trained in the agitation-froth process it is a simple matter to adjust the conditions so as to produce a good, thick, matted, coherent froth.

(Page 265):

To conclude, the conditions of re-agents, that is to say, oil, acid or acid-salts, are suitably combined with the temperature and agitation conditions so that the cost of operation would be a minimum. In all the slide machine tests that I have conducted I have never had to use quantities of oily re-agents outside those mentioned in the patent in suit. The greatest amount of oil that I have ever used in practice is four pounds per ton of ore, and the smallest amount I have ever used in practice is one pound of oil per ton of ore.

(Pages 279-280):

96 Q. Now as to the agitation-froth plant at the Emu Works in South Wales, what oil was used and what amount per ton of ore?

A. We used oleic acid amylacetate and on occasions Karsam soap. The consumption of oleic acid was, roughly, two pounds per ton. The soap, when being

used with the oleic acid, about .2 pounds per ton. Amyl-acetate, when being used with oleic acid, from .25 pounds per ton up to .5 pounds per ton. Amlyacetate, when being used alone in the first test, about one pound per ton.

(Page 281):

102 Q. Now as to the plant installed by you in Finland, what oil was used and in what amount per ton of ore?

A. We used oleic acid and eucalyptus oil. The two oils were added at the following rates: Oleic acid from .5 to two pounds per ton; eucalyptus oil, .2 pounds per ton.

(Pages 281-282):

104 Q. Now, as to the plant installed by you at the Saxbergets Mine in Sweden, what oil was used and in what amount per ton of ore?

A. We used a very cheap locally obtained wood tar oil. We used four pounds per ton of ore treated.

(Pages 282-284):

109 Q. About what relation have you found to exist between tests in the slide machine and the actual working of commercial plants, when the agitation-froth process is tested and used?

A. The results produced by the agitation-froth process in practice have been, on every occasion that has come under my own personal observation, an improvement on the result obtained in the slide machine. The improvements were not only those of recovery, but in the consumption of re-agents.

110 Q. What has been your experience when, in using the agitation-froth process on a commercial scale, with a normal and proper consumption of one and a half

pounds of oil per ton of ore, this procedure has been varied by increasing the oil feed to two and a half pounds per ton of ore?

A. The mineral froth being produced on the spitz boxes loses at once some of its natural color and lustre and becomes dull in appearance. The quantity of froth being recovered on No. 1 box is considerably lessened. The froth on No. 2 spitz is slightly increased and the same with No. 3 box. The tailings on examination immediately show increased losses of sulphide mineral. These losses take the form of well oiled agglomerations.

111 Q. And what has been your experience when the normal and proper feed of one and a half pounds of oil per ton of ore has been diminished to half a pound of oil per ton of ore?

A. The froth being recovered immediately diminishes in quantity and the color shows the presence of slime gangue. The supporting liquor of the spitz box immediately changes in appearance and shows the natural color of the ore slimes. The tailings become very dirty and show no sign of what we know as a good "clean-up." In fact, the whole treatment suffers and unless the oil feed is restored to its normal condition a serious drop in recovery takes place with the production of a lower grade concentrate.

(Page 292):

138 X-Q. Did you ever make any tests of the operations set forth in the patent in suit by performing those operations in a bottle or test tube?

A. Yes.

139 X-Q. Will you describe how you did it?

A. I would take a bottle of a capacity of, say roughly, 100 cc. and in it place 20 grammes of ore and 70

grammes of water. To this I would add sulphuric acid to equal roughly twenty pounds of acid to the ton of ore. To this I would then add oil by drops equivalent to one and a half to two pounds of oil per ton of ore, and agitate vigorously. These tests would serve as an indication only, and would be used to indicate the condition for the first investigations when using the Sulman & Picard slide machine. I would never use a bottle test to obtain quantified results and would only use it for the reason I have just mentioned.

(Pages 295-296):

154 X-Q. Did you ever try the Froment process with oil amounting by weight to one per cent. of the ore being treated?

A. The quantities of oil I used in the Froment test were always between 60 and 120 pounds per ton, which equals roughly, from 3 to 6 per cent. of the weight of ore.

155 X-Q. Did Mr. Sulman instruct you to use these amounts of oil?

A. I was working entirely under Mr. Sulman's instructions.

156 X-Q. Did Mr. Sulman ever instruct you to try the Froment process with an amount of oil that would just produce a film upon the sulphide particles?

A. No.

157 X-Q. What kinds of oil did you use in experimenting with the Froment process?

A. We used the same oils in the Froment process as we did in our work on the Cattermole process.

(Pages 317-318):

223 X-Q. You have been asked what your experience was when, in using the agitation-froth process on a commercial scale, with a normal and proper consump-

tion of one and a half pounds of oil per ton, you increased the oil feed to two and a half pounds of oil per ton, and you stated that the mineral-froth lost some of its natural color and lustre, that the quantity of froth recovered on No. 1 box was lessened, that on No. 2 spitz and No. 3 spitz was slightly increased, and that the tailings showed increased losses of sulphide mineral, taking the form of agglomerations. Suppose you had increased the amount of oil under the conditions of the question referred to to five pounds per ton of ore, would the defective conditions have been still further increased?

A. Certainly.

(Pages 318-319):

226 X-Q. You have said that with the oil reduced to half a pound per ton of ore the froth immediately diminishes in quantity and the color shows the presence of gangue. I take it that you have experimented, or experienced in practice this condition of half a pound per ton. Is that correct?

A. Yes. I have experienced this condition on occasions when I have been demonstrating to our clients at Broken Hill that it would be impossible to reduce the oil consumption below that at which we were operating, and so reduce the cost of treatment. I mean, of course, reducing oil consumption without loss of recovery or in any way affecting the practical value of our work.

227 X-Q. You would not expect successful results with fifteen or eighteen pounds of oil per ton under those conditions where a pound and a half per ton was the proper and normal feed?

A. You could get successful results on this quantity of oil by varying the conditions of agitation, namely, I should expect to have to make repeated agitations to

beat more air into the pulp. I cannot say this definitely because I have never tried this wasteful quantity of oil in practice.

228 X-Q. It is your idea then that with the larger amounts of oil more agitation would be necessary?

A. In this particular instance the agitation that would be necessary would be far beyond practical limits.

229 X-Q. But whether practical or not, more would be necessary to produce the result?

A. I should expect so. The purpose of the extended agitation in this case would be for beating air into the pulp, and not for the oil coating of the mineral.

William H. Ballantyne.

(T. R., Vol. II, pages 362-363):

The next process of ore concentration by the use of oil which was to any extent successful in practice was the Cattermole process. I first saw tests of this process carried out by Mr. Cattermole in small bottles at the end of 1902. From that time onwards Messrs. Sulman, Picard & Ballot, with various assistants, were engaged for about two and a half years experimenting with the Cattermole process described in the United States patent No. 777,273, and exploiting the invention. Briefly stated the process is as follows: Finely crushed ore containing sulphide minerals is mixed with four times its weight of water (generally acidified) and to this is added a small quantity of oil or oily emulsion, the proportion of oil varying from forty-five pounds per ton of ore to seventy pounds per ton or more in certain cases. The mixture was agitated, first in a very violent manner so as to bring the oil into intimate contact with the sulphide particles. At this stage the oiled sulphides have agglomerated together into small flocculent masses called "flocks." Thereafter the mixture was subjected to a rolling form of agitation to cause the agglomerates to form into shotty granules.

(Pages 364, 365, 366, 367, 368, 369, 370, 371):

10 Q. Please now relate the facts within your knowledge which led to, and culminated in, the invention of the patent in suit.

A. As I have stated, from the end of 1902, onwards I have been in constant touch with Messrs. Sulman, Picard & Ballot. . . .

Almost from the start another aim which Sulman, Picard and Ballot expressed to me was the reduction of the quantity of oil to be used in the Cattermole

process. At the beginning of January, 1905, Messrs. Sulman and Picard informed me that they had been appointed by Messrs. Minerals Separation, Ltd., to take full technical control of the experimental work of that company and to take the technical control of the test works at Aldermanbury avenue. They expressed themselves as very pleased because they were anxious to work out to finality the process of ore concentration by the use of small quantities of oil. Mr. Ballot was then, as now, the Managing Director of Minerals Separation, Limited, and during the first three or four months of 1905 investigations and discussions were taking place practically every day between Messrs. Sulman, Picard and Ballot and myself. In or about the first week of February, 1905, at a conference at 62 London Wall, these gentlemen informed me that they had decided to get to the bottom of their loose-end observations, and for that purpose they had decided to investigate and quantify all the factors connected with the Cattermole granulation process. They informed me that they had drawn up a series of tests which they were proceeding to carry out, and they intended to have the results all plotted in curves, and we discussed the method of indicating the results. I particularly remember these gentlemen informing me at this time that they "intended to reduce the proportion of oil to a vanishing point," indeed, I believe these very words were used. At the end of February, 1905, Sulman, Picard and Ballot devised the process described in the British patent No. 5260 of 1905, a process in which no oil is used at all, and I remember saying to them at that time (February, 1905), "you have indeed reduced the quantity of oil to a vanishing point." I only mention this to fix the dates, as this patent to which I have referred had nothing to do with the investigations of the various factors of the Cattermole process.

From the 8th of March, 1905, to the 15th of March, 1905, I saw Messrs. Sulman, Picard and Ballot nearly every day. On one of these days, I cannot fix the actual date, they informed me of their startling discovery of the agitation-froth process. To the best of my recollection, Mr. Ballot went out of town for some days thereafter, and it was not until the 31st of March, 1905, that we got together again and fully discussed the protection of the invention of the patent in suit. One of the first days of April, 1905, I attended at the Aldermanbury Avenue Works with Messrs. Sulman, Picard and Ballot, and they demonstrated their process to me. Broken Hill tailings crushed to 60 to 90 mesh were mixed with slightly acidified water and introduced into the ordinary Gabbett of the Cattermole test plant. 0.1 per cent. of oleic acid was added, and the whole pulp was heated to a temperature between 30 to 40° Centigrade. After violent agitation in such a way as to introduce air into the pulp, the agitation lasting for several minutes, the pulp was brought to rest and immediately a coherent and persistent froth rose to the surface. Although I was very closely familiar with all the earlier processes of ore concentration in which oil had been used, including all the prior patents which have been mentioned in this suit, the production of this agitation-froth was to me little short of a miracle. I had never seen anything of the sort before, and I recognized that Messrs. Sulman, Picard and Ballot had at last reached success in their investigations and had devised a process which would economically and successfully concentrate ores.

Summing up the above, Messrs. Sulman, Picard and Ballot first installed the cone mixer and started working along the lines of violent agitation and from an early date in 1903. Secondly, they found it most advan-

tageous to use oleic acid in their investigations. Thirdly, they found that the heating of the pulp had an influence upon the oiling of the metalliferous matter, and this led them to experiment with heated pulps when going into details of their final tests. Fourthly, they determined to experiment with finely crushed ore containing a high proportion of slimes, and they did so. Fifthly, they determined to reduce the quantity of oil to a vanishing point, and to do it step by step so as to ascertain the results obtainable throughout the range of reduction, in each case using the slimy pulp, the violent agitation, and various degrees of temperature; and using also a pulp acidified to the extent to which they were accustomed in their previous investigations.

I have seen the agitation-froth process carried out many hundreds of times. I have also seen investigations of the process making wide variations step by step in the factors which I have referred to above, and I have myself, on many occasions, carried out these investigations and I now know that if the instructions which Messrs. Sulman, Picard and Ballot drew up in February, 1905, are carried out, namely, to use a slimy pulp, acidified with say .5 per cent. of sulphuric acid, to heat the pulp say to 30° Centigrade and then to agitate it violently with proportions of oil beginning at fifty pounds of oil per ton of ore and repeating this test, reducing the quantity of oil step by step down to the vanishing point, it is inevitable that the agitation-froth shall be produced when the quantity of oil is diminished to the limits set forth in the patent in suit, and that a particularly good froth and efficient concentration is obtained when the proportion of oil is about 0.1 per cent. on the ore, the percentage recommended in the patent in suit as being suitable and economical. I also know that the oil selected by Messrs. Sulman, Pic-

ard and Ballot, namely oleic acid, is one of the best and in most cases the best oil that can be used for carrying out the agitation-froth process.

(Pages 399-400):

31 Q. Assuming that powdered ore, water acidified with sulphuric acid, and oleic acid, are fed into the defendant's apparatus referred to in the last question, what have you to say as to what would happen?

A. Firstly, if this operation were performed so as to produce a floating froth of concentrates in the spitz boxes, the operation could only be consistent with the use of the agitation-froth process as described in the patent in suit. Secondly, if the amount of oleic acid used were too low to produce the agitation-froth, it is obvious that the froth would not be produced. Thirdly, if the amount of oleic acid were in excess of that necessary to produce the agitation froth in the most efficient and economical way, part of the sulphide contents of the ore would be agglomerated into little flocks which would sink in the spitz box and the froth would no longer be a good and efficient froth.

(Page 407):

48 X-Q. The illustration of the Gabbett A in Figure 1 of the drawings of the patent in suit illustrates the outer cylinder or containing vessel as transparent, shows the cone mixer inside of the vessel, shows the shafts supporting the cone mixer, the bearings for the shafts, the pulley for rotating it, inlets for the various reagents, and for the ore, and also shows the outlet. In what respect is this illustration conventional in the sense in which you have referred to the pump as conventional, in other words, are not all of the various parts shown in detail except the baffles?

A. . . . The illustration of the cone mixer is conventional for two reasons, first, because the cone mixer was a well-known device, and, secondly, because the patent is for a process, in which it is clearly stated that the ore pulp and a minute quantity of oil is to be vigorously agitated until the oil has been brought into efficient contact with all the mineral particles in the pulp, etc.

(Page 410):

51 X-Q. Do you remember having any consultation with Messrs. Sulman, Picard and Ballot regarding the instructions given to Mr. Higgins to vary the different factors in the effect of those factors upon granulation, as set forth in Sulman and Picard's Report, March 3, 1905?

A. I had nothing to do with the drawing up of any instructions to the assistants of Messrs. Sulman, Picard and Ballot; indeed, beyond Mr. Chapman, Mr. Reed and Mr. Leechman, I did not know the assistants' names. I do remember in the early part of February, 1905, having a consultation with Messrs. Sulman, Picard and Ballot, at which they spoke of the investigations which they were about to make, and we discussed the method in which the results were to be indicated; and I particularly remember these gentlemen stating to me that in their investigations they were going to reduce the proportion of oil used in the Cattermole concentration process to a vanishing point, making the reduction step by step, and noting the results.

(Page 411):

53 X-Q. Did you approve of this project to experiment with varying quantities of oil in the investigation of the granulation process?

A. I merely listened to what was told to me; I offered no opinion on my clients' projects.

(Page 412):

55 X-Q. Does the process which you call the agitation-froth process always result in the production of this phenomenon which you term a thick, coherent and persistent froth as distinguished from the froth of bubbles which you say you have seen produced by the Froment procedure?

A. The process which I call the agitation-froth process is the process set forth in the patent in suit, and when that process is normally operated to its proper purpose and effect it results in this very characteristic phenomenon which I term a thick, coherent and persistent froth. The process as a whole is entirely distinct from the Froment procedure and the froth produced by the process of the patent in suit is quite distinct from anything which I had seen produced by the Froment process. The froth of bubbles which I had seen produced by the Froment procedure was produced in a test tube.

(Pages 427-429):

77 X-Q. The froth produced in the operation of the so-called agitation froth process is composed, is it not, of a large number of bubbles, more or less covered with the metallic sulphide particles of the ore?

A. In answering this question I shall have to make statements bordering on theory, and I am, therefore, expressing only my opinion. It is known to students of molecular physics that a persistent froth of air and water cannot be produced unless the water films are contaminated. In my opinion the froth produced in the operation of the agitation froth process set forth in the patent in suit is composed of bubbles of air, the

walls of which consist of water contaminated with myriads of particles of very finely divided sulphides, and the surface tension relationship between the sulphide particles on the one hand, and the water and air on the other hand, has been altered by the minute trace of oleic acid or other oil. An inspection of the agitation-froth shows that the walls of the bubbles are contaminated by these sulphide particles; and it is a fact that the agitation-froth process operates most effectively when a large proportion of the sulphides is in the form of slimes; that is to say, when a large proportion of the sulphides will pass through a screen of 150 or 200 meshes to the linear inch. It is noticeable in the agitation-froth process that the sulphide particles still retain their natural appearance, and they are not in the form of flocks.

78 X-Q. In any event, the froth formed as a result of the operation of the so-called agitation-froth process consists of bubbles, the walls of these bubbles being formed of water contaminated by or containing metal sulphide particles, the formation of such sulphide-bearing bubbles being promoted by the oil present. Is this not correct, disregarding for the moment any scientific discussion of the minutiæ of the matter?

A. This is correct, and it is a remarkable fact that this characteristic agitation froth can only be produced by the process described in the patent in suit, so far as I am aware.

(Pages 435-436, answer to X-Q. 81):

. . . Turning to the agitation-froth process described in the patent in suit. It is clearly stated on page 1, line 96, "the minimum amount of oleic acid which can be used to effect the flotation of the mineral in the form of a froth may be under 0.1 per cent. of

the ore; but this proportion has been found suitable and economical." This statement clearly directs the metallurgist to use 2.24 pounds of oil per ton of ore or less, and my experience is that 2 pounds ~~of ore~~ by one and a half pound of oil per ton of ore is an ideal standard for the agitation-froth process. In the agitation-froth process the minute trace of oil added is not proportioned to the metalliferous constituents of the ore. In my opinion a metallurgist in putting into operation the agitation-froth process would start with 0.1 per cent. of oleic acid on the ore, and this would probably give him a good result. If he found that there was a tendency for some of the metalliferous particles to agglomerate together and sink he would reduce the quantity of oil from say 2 pounds of oil per ton of ore down to say 1½ pounds of oil per ton of ore.

Apart from these considerations as to the proportion of oil used which bring out fundamental distinctions between the Froment process and the agitation-froth process, I wish to say that no fanciful or imagined variations in the quantity of oil necessary in the Froment process could possibly convert the Froment process (which depends upon certain phenomena) into the agitation-froth process, which depends on a very unique, characteristic and entirely distinct phenomenon.

Referring again to the first reason set forth in my answer to 80 X-Q., the quantities of oil necessary in the Froment process would be quite unsuitable to cause the formation of an agitation-froth.

(Pages 437, 438 and 440):

82 X-Q. Suppose you were treating an ore containing five per cent. of zinc sulphide, the rest of the ore being gangue of such a character as not to interfere with the flotation of the blende, and that you used suitable oil in quantity equal to 1 per cent. by weight of the

ore, agitated the pulp in a suitable apparatus, such as a Gabbett mixer, it being presupposed that the ore contains either naturally or by addition thereto one per cent. of calcite, and that sufficient sulphuric acid has been added to react with all of the calcite, that after agitation the Gabbett is stopped and the blende allowed to float, would not each step so performed be in accordance with Froment's patent as directed in lines 33 to 39, page 2 of the British specification, except for the adjustment of the quantity of calcite and oil to the figures mentioned in his instructions? My question is not directed to ascertaining what results would be obtained by this operation, or what form of float would be secured, but is directed towards ascertaining whether the steps set forth in the question, irrespective of the result produced, would not conform to Froment's British patent and instructions as defined in the preceding part of the question.

A. The last sentence of your question contains suggestions with which I entirely disagree. For example, the agitation-froth process does not consist in a series of steps, but embodies, as I have stated, a unique and very remarkable phenomenon. In short, the agitation-froth phenomenon is produced by agitating the ore pulp with a minute trace of oleic acid or other suitable oil, so as to form the agitation-froth, and the proportion of oil recommended in the patent in suit is 0.1 per cent. on the ore or less. . . . The quantity of oil being about ten times the amount necessary for the production of an agitation-froth (that is to say, ten times the amount stated in the patent in suit to be suitable and economical), I should next expect that the oiled sulphides would agglomerate together into little loose flocculent masses. The beating in of air in the Gabbett would, in my opinion, effect an air-attachment to some of these flocculent masses; and when the agita-

tion is stopped I should expect that the great bulk of the flocculent masses of oiled zinc sulphide would sink with the gangue and possibly there would be a little floating oily matter, some floating flocks with air-attachments.

(Pages 448-449):

99-X Q. You answer upon the theory that all of the oil becomes attached to the metalliferous particles, do you not?

A. I answer upon the theory that all of the oil either becomes attached to the metalliferous particles or floats.

100 X-Q. Would this be the case also in what you term the agitation-froth process?

A. The proportion of oil used in the agitation-froth process is one and a half pounds or two pounds per ton of ore (*i. e.*, about 0.1 per cent. or less as recommended in the patent in suit). This is a very minute quantity, and in my opinion the oil furnishes a microscopic film on the sulphide particles. In the agitation-froth process it is a fact that practically all of the oil becomes attached to the metalliferous particles, but the quantity is so small that it cannot be seen under the microscope.

(Pages 449-450):

102 X-Q. Then this so-called agitation-froth process even by the terms of the patent may be conducted, under some circumstances at least, by the use of an amount of oil equal to practically one per cent. by weight of the ore, or, to conform to the precise directions of the patent, less than one per cent. by an amount infinitely small, say .9999 per cent. This last amount of oil would be a fraction of one per cent., would it not, as contemplated by the patent?

A. In my opinion the operation of the agitation-froth process is defined in the clearest possible terms in the patent in suit, and this remark applies particularly to the quantity of oil to be used. It is a fact that 0.1 per cent. of oil on the weight of ore is a suitable and economical quantity to use for the production of the agitation-froth, in the instance given in the patent and in those instances where I have seen the process in use. Less oil than this may also in some instances be effectively used, as stated in the patent in suit. It is further made clear in the patent in suit that the quantity of oil used must not be such as to cause agglomeration, as in the Cattermole process. If a metallurgist used a quantity of oil sufficient to cause the sulphide particles to agglomerate and sink, he would be using too much oil for the process of the patent in suit; and, further, if a metallurgist was minded to carry out the agitation-froth process as defined in the patent in suit, and if he used more oil than is necessary to produce the agitation-froth, he would be doing something wasteful, and in ore concentration economy is of first-rate importance. The fact is that Sulman, Picard and Ballot found that when the proportion of oily substance was considerably reduced from the Cattermole quantities, and after vigorous agitation of the pulp, the tendency of the froth to form began; and when the proportion of oil was reduced to 0.1 per cent. they found that an efficient agitation-froth was produced. I have never seen the agitation-froth process successfully carried out by the use of an amount of oil equal to practically one per cent. by weight on the ore, and in my opinion 0.9999 per cent. of oil would not be a proper quantity (that is to say, it would not be a suitable and economical quentity), as contemplated by the patent, and would not therefore be a suitable fraction of one per cent. as contemplated by the patent.

Dr. Adolph Liebmann.

(T. R., Vol. II, pages 531-534):

5 Q. Having in mind the state of the prior art as disclosed by the several patents referred to in defendant's testimony, please give consideration to the invention shown, described and claimed in the patent in suit, and give such explanation thereof as will assist the court in its understanding of that invention.

A. Having carefully considered the objections raised by the defendant and disclosed in the different patent documents, which I may say represent practically the whole history of this branch of ore concentration, I have formed the opinion that the invention now in controversy is an entirely novel, ingenious and unexpected process, which by its great simplicity fulfills the most ideal demands of ore concentration.

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The present invention differs essentially from all previous attempts. It is true that oil is one of the substances used, but it is used in such quantities which were never heard of, and it produces a result which was never obtained before. The result is that the minerals are obtained as a froth of very peculiar character. It is a froth consisting of air bubbles, which in their covering film have the minerals embedded in such manner that they form a complete surface all over the air bubbles. The remarkable fact with regard to this froth is that, although the very light and easily destructible air bubbles are covered with a heavy mineral, yet the froth is stable and utterly different as far as this property is concerned from any froth known to me. It appears as if the minerals were protecting the tender air bubble like an armor, and, instead of destroying it, were actually guarding it. The froth has a long life. One feels

tempted to say it is permanent, at least as far as the metallurgical operations are concerned. I have myself seen a froth standing for twenty-four hours without the least change having taken place. Further, a very striking difference between the previous processes and the process of the patent in suit is the difference between failure and success. This I will explain more fully hereafter.

The simplicity of the operation as compared with the prior attempts is startling. The whole work which has to be done is to add an infinitesimal quantity of oil to the pulp, to which one may or may not add an acid, agitate from two and a half to ten minutes, and collect the froth which appears after a few seconds collecting on the surface. The froth contains a large percentage of the minerals present in the ore. For continuous work nothing is required but an agitator, which is connected with another vessel, such as a spitzkasten, from which the concentrates overflow as a thick froth.

The appearance of this froth is most remarkable. The color and lustre of the minerals is the same as if no oil were present. It is very strong and, even if the top layer is destroyed, the underneath layers will bear it without being destroyed themselves and carry the mineral fallen from the top layer along. No air bubbles are visible—nothing but the uninterrupted covering formed by the concentrates.

(Pages 575-576):

Cattermole has described in the text of his patent a rolling form of agitation as preferably to be used in some stages of the process to obtain a good granulation of the mineral, this rolling to be such as is had in cylinders or barrels. This appears at page 3, lines 46-50. This is not shown in the drawings. Of course, a cylinder or barrel could be used in place of any cone

mixer which is shown, and it would be reasonable to put cylinders or barrels in place of the last two cone mixers. Indeed, it would be self-evident that this would be the place to use the rolling form of motion, as the first set of cone mixers could then be relied upon to intimately mix the oil with the mineral.

The proportion of oil used depends on its viscosity, the fineness of the ore and other factors, and on the consistency and size of the granules desired. The more oil used, the larger, softer and less numerous the granules. With 10 per cent. of oil to the weight of minerals, only a few pasty masses of oil agglomerated minerals will be generally obtained, and oil in excess of this quantity may cause all the granules to coalesce into one soft mass. Cattermole recommends a quantity of oil between 4 and 6 per cent. of the weight of the metalliferous mineral matter present in the ore, but this is only a recommendation and a statement of what he has usually found to be necessary. It is clear from this description that a definite amount of oil to produce good granulation effects cannot be given, as the final result is determined by many factors which have to be first experimentally ascertained. No definite law of proportions can be laid down for this process, which is a process for the treatment of a large class of substances, each differing from the other in many ways, and is in that respect like all other processes which are destined for the use of differently constituted compounds and not for the use of one individual substance. But the patentee has described his invention so well and exhaustively that a few experiments will suffice to determine the proper proportions suitable for a given ore.

(Page 588):

Experiment IV was carried out with proportions of oleic acid which fall within the Cattermole range. 20 lbs. of ore were mixed with 60 lbs. of water and 4 oz. of oleic acid (1.25 per cent. on the ore and about 4 per cent. on the mineral) were mixed in a cone mixer for five minutes. After agitation, a partial layer had formed on the top containing very little mineral. Imperfect granules, which owing to slime and not quite sufficient oil, were not as compact as the usual Cattermole granules, were at the bottom. The mixture was conveyed into the helix apparatus described in the previous experiment and the helix was rotated with a speed of 240 revolutions per minute, whilst at the same time air was blown in. The result was an aggregation of pasty particles on the surface, which floated as skin flotation.

(T. R., Vol. III, pages 677-679):

Dr. Byrnes states that he has produced in the first experiment of the series a froth of concentrates. There is nothing surprising in this. He used the process which for the first time in the history of ore concentration was revealed in the patent in suit, and he practically used the quantities which are described therein as being suitable and economical. He commingled, by brisk agitation, air, ore and traces of oil, traces so small that they cannot be translated into the test tube experiments of Froment. He produced the agitation froth. He did not learn that from Froment, but he learned it from the patent in suit. He then used the same process with very much larger quantities of oil and states again that he obtained a froth. There may be what is popularly called a froth, but this froth differs in characteristic qualities from the froth produced

with the quantities of oil described by the patentees of the patent in suit as suitable and economical. It contains large quantities of oil which are quite visible and can even be detected by the touch. The appearance of the minerals is changed. They have a dull look and lack the metallic luster of the minerals. The agitation froth produced with the quantities of oil which the patent in suit informs you are suitable, does not disclose the presence of any oil. The faint traces of oil which must be there are absolutely invisible and only a careful chemical analysis can show their presence. To the touch the concentrates thus obtained are the same as the ordinary mineral which had never been treated with any oil. I cannot understand why Dr. Byrnes produced these experiments. He only proves that he can produce, with much larger quantities of oil than are considered economical by the patent in suit, a froth, but at the same time he proves that the quantities recommended as economical in the patent in suit are economical. It frequently occurs in patent litigation that a defendant will make an untenable defense by alleging that he produced a result by different quantities, sometimes by much larger quantities, but, of course, such a defense must always fail. It is no defense to use the essence of the invention and produce only a result which increases the cost of production in such an enormous way as the cost would be increased if quantities of oil were used such as described in experiments 2, 3, 4 and 5 of the series described in Defendant's Record, pages 165 and 166. I have stated my views on the Froment patent and on the Froment instructions fully, and I need only repeat once more that there is nothing contained therein which would enable anybody to produce the agitation froth of the patent in suit, and, furthermore, that there is nothing con-

tained therein which might lead an investigator even in the direction of the invention of the patent in suit.

(Pages 684-685):

37 Q. Please now give consideration to the testimony of Dr. Byrnes relative to the patent in suit as appearing in his answer to Q. 4, pages 110 *et seq.* of Defendant's Record, and again at pages 167 *et seq.* of Defendant's Record, making such explanation of your own knowledge of the same subject-matter as may clear up the matters referred to.

A. It is true that the patent in suit makes use of the well-known property of minerals that they have an affinity for oils, whilst the gangue practically repels the oils. It has been stated in this evidence that this fact is as old as at least Heredotus. Anyhow, it was clearly established in Haynes' specification applied for in 1860, and since then a number of attempts have been made to solve the difficult problem of ore concentration by this method. They have all failed, although two of them, namely, Elmore and Cattermole, have been practically used. They disappeared as soon as the new invention which forms the subject-matter of the patent in suit was made. The patent in suit was the final solution of a problem to which, as the number of patents offered by the defendant proves, a great many inventors had applied their ingenuity, their energy and time and labor, and had been unable to accomplish the result. It happens frequently so with great inventions. The results are not obtained suddenly. Very often a large number of years pass by, every year containing a contribution which remains sterile, until finally the right way is found and the world enriched thereby.

(Page 688):

Dr. Byrnes continues his description and refers to a specific example contained in the specification, but he has here overlooked the important statement:

> "The minimum amount of oleic acid which can be used to effect the flotation of the mineral in the form of froth may be under 0.1 per cent. of the ore; but this proportion has been found suitable and economical."

This statement is of significance. Even at the time when the inventors could have only a comparatively small experience, they found the proportion of oil in quantities of 0.1 per cent. to one hundred parts of ore suitable and economical. In the number of years which have passed since the filing of this specification, this experience has been confirmed, and proves the power of exact and careful observation of the patentees. In the description of this example, the patentees also called attention to the fact that the power of flotation of the froth is mainly due to the inclusion of air bubbles introduced by the agitation.

(Page 689):

In the agitation froth process, the oil, although specifically lighter than water, is present in such small quantities, in quantities which I called before infinitesimal as compared with the quantities of oil used formerly for flotation processes, and infinitesimal as compared with the quantity of mineral which they have to coat, that it scarcely plays any part in the flotation of the minerals.

(Pages 691-692):

It is a suitable place here to give my experience of the working of the patent and to describe such experiments which will be of assistance in showing that the

statements made in the patent are correct. I have seen the process carried out several times in the plant at the works of Minerals Separation, Limited, in London. This plant is capable of treating fifty tons of ore a day of twenty-four hours. It is practically the same as that shown in the drawings "Complainants' Exhibit King John's Court Standard Plant," with the exception that another spitzkasten has been added in front of the agitating box marked 3, so that there are six spitzkasten, instead of five, shown in the drawings, and that the deflector F was not present. I saw on the spitzkasten large quantities of the froth, which I have characterized before, sometimes three or four inches deep. I have also made numerous tests in the slide machine and in the cone mixer or Gabbett, and I have used for these tests different ores and different oils. I usually succeeded with the quantity of oil, namely, 0.1 per cent., which is recommended in the patent as "suitable and economical." In one instance I found the addition of .025 per cent. to .1 per cent., making a total of .125 per cent., was necessary for the production of a good froth. This was with palm oil. With linseed oil I got the best result with .2 per cent.

(Pages 708-709):

The last part of Dr. Byrnes' answer referred to, pages 173, 174 of Defendant's Record, states that the patent in suit is very vague as to the details of the process and as to the proportions of oil and acid to be employed. He says here again what he has also stated on page 180 of Defendant's Record, namely, that the patent specifies the proportion of oil and acid,

> "say from 0.02 per cent. to 0.5 per cent. on the weight of the ore,"

and continues later on—

> "Later the description states, in the most gen-

> eral terms, that the proportion may be 'under 0.1 per cent. of the ore.' "

He omits deliberately to state the end of the sentence, closing the quoted part from the patent in suit (page 1, lines 100, 101):

> "may be under 0.1 per cent. of the ore; but this proportion has been found suitable and economical."

This is a distinct statement, and sufficient guidance for any metallurgist to work upon.

(Pages 709-710):

They (the patentees) give as an example the well-known Broken Hill ore, with which they appear to have been very familiar. They inform the world what they consider the limits of their proportions, and they add that in their experience 0.1 per cent. of oil of the amount of ore has been found "suitable and economical." Surely one cannot demand more, and even a metallurgist of very low qualifications cannot fail to determine with the greatest ease what quantities will give him the desired results.

(Pages 734-735):

There is a wide difference between the coating with oil as disclosed in patents No. 788,247 and No. 777,274, and the coating with oil as disclosed in the patent in suit, and it is quite apparent from the quantities which are described as useful in the two different sets of patents. In the Cattermole patents No. 788,247 and No. 777,274, the quantity is clearly alike with the quantity disclosed in Cattermole patent No. 777,273, and that is 4 to 6 per cent. on the minerals (1.4 to 2 per cent. on the ore), with a warning that the process is not to be used with lean ores. In the patent in suit the quantity found suitable is .1 per cent. Expressed in pounds per

short ton, Cattermole requires 28 to 40 lbs. as a useful quantity, and the patent in suit describes 2 lbs. as a useful quantity.

(Page 749):

In none of these alleged anticipations is the phenomenon or the process of the patent in suit disclosed. In none of these alleged anticipations is there any suggestion which would lead anybody towards the process or the phenomenon of the patent in suit. In none of these alleged anticipations is there any suggestion that by beating in air a froth could be produced consisting of air bubbles densely covered with minerals and carrying practically the whole mineral contents of the ore. In none of these alleged anticipations is there any suggestion that a quantity of oil could be used so small that it disappeared and could only be detected on the concentrates, by chemical methods.

(Pages 783-784):

90 X-Q. Did this agitation froth which you secured contain bubbles of gas covered with an envelope of sulphides?

A. This agitation froth contained bubbles of gas covered with an envelope of sulphides, and it differed in this respect from the magma obtained according to the Froment test tube example. It was perfectly stable, the minerals were brilliant and had a metallic luster. When it once appeared on the surface, it stayed, and when sunk by force it could be reobtained by vigorous agitation. The Froment magma is more like an oily layer containing bubbles of carbonic acid, which are enclosed in oil in which the minerals are embedded. The magma is not lasting. In the agitation froth, no oil can be discovered. If it is put on blotting paper, it dries, but it retains its shape. If the Froment magma

is put on blotting paper the oil soaks into the blotting paper and leaves a large spot, and the bubbles collapse. In the agitation froth, the film enclosing the air is water, which is protected and strengthened by a dense layer of the minerals. In the magma there is a layer of oil, which contains carbonic acid bubbles, and the film enclosing them is oil covered with minerals. The difference between the two is that the agitation froth is lasting, whilst the bubbles contained in the magma are not.

(Pages 795-797):

117 X-Q. In your answer to my question numbered 103, you have stated how you would proceed if it were your intention to produce what you term "an agitation-froth." Did you ever perform any operation following the lines laid down by you in your answer to that question, except that you used an amount of either cotton-seed oil, olive oil, oleic acid, or other suitable oil, equal to more than one per cent. by weight of the ore operated on, and particularly did you ever, in such an operation, use an amount of a suitable oil equal to 3.6 per cent. by weight of the ore, this latter proportion of oil being that used by Dr. Byrnes in the experiments described by him beginning with the paragraph at the bottom of page 165 of Defendant's printed Record and extending through the first two paragraphs on page 166?

A. I have made no such test tube experiments, but I see that your question is not limited to test tube experiments. I have made a number of experiments in which I used more than one per cent. of oil in proportion to the quantity of ore used. They refer to the alleged anticipations which have been produced by the defendant. I find one note in which I say "50 grams of ore, 150 cc of water, ½ gram of sulphuric acid, 1½

grams of oleic acid, all at bottom." This experiment was made on 22nd of July, long before I had read the evidence of Dr. Byrnes.

I have another experiment here in which I used 400 grams of ore, 1600 grams of water, 4 grams of sulphuric acid and 12 grams of oleic acid. This experiment was carried out in a cone mixer, and the agitation lasted two and a half minutes. The temperature was 44° Centigrade. The remarks are:

> "No froth; granules below sand."

This experiment was made on the 23rd of July, long before I had any knowledge of Dr. Byrnes' evidence.

On the same day I made an experiment with the same quantities, except the quantity of oleic acid. That was 20 grams. The temperature was 40° Centigrade. The remarks are:

> "No froth; granules heavy, much heavier than sand; granules formed bigger during agitation."

This latter part must mean during continued agitation.

Then I have an experiment on the same day. The quantities the same as before, with the exception of the quantity of oleic acid. That was increased to 40 grams and the remarks underneath are:

> "Granules getting bigger and heavier; thin layer of oil on surface."

Where I used 50 grams of ore and 1½ grams of oleic acid, the proportion was 3 per cent. of oil as compared with the ore.

Where I used 400 grams of ore and 12 grams of oleic acid, the proportion was 3 per cent. of oleic acid.

Where I used 400 grams of ore and 20 grams of oleic acid, the proportion was 5 per cent. of oleic acid.

Where I used 400 grams of ore and 40 grams of oleic acid, the proportion was 10 per cent. of oleic acid.

These examples could be continued, but I should

like to specifically mention the experiments made with special reference to the Cattermole patent. The quantities of oil used therein are within the limits of your question. The experiments described were made by me only for the purpose of study.

(Page 800):

126 X-Q. In any of the operations which you performed following the lines laid down by you in your answer to X-Q. 103, did you obtain any flotation of the metalliferous mineral when using more than one per cent. by weight of oil, that is, one per cent. of the weight of the ore?

A. In all experiments along the line which I described in answer to X-Q. 103, the bulk of the minerals was always at the bottom. There may have been at times a small part on the surface as skin flotation, and there may have been at times a thin layer of oil on the surface. I am excluding from this answer experiments made with such quantities of oil which resulted partially in oil buoyancy flotation and partly in the collection of the minerals at the bottom of the vessel. But, I should say broadly that the results which I have fully described are the true expression of my experimental experience.

127 X-Q. Is your answer to the preceding question limited to those operations in which you used an amount of oil equal to more than one per cent. by weight of the ore; or does the answer apply to operations including all the quantities of oil which you have used in practicing according to the procedure set forth in your answer to X-Q. 103?

A. My answer applies to such experiments which started at the lower limit with the Cattermole proportions of oil, namely, about 1.4 per cent. of oil upon the ore.

(Page 802):

130 X-Q. I understand from your answer to X-Qs. 126 and 127 that you have never, in your operations along the lines laid down in your answer to X-Q. 103, obtained any floating mineral-bearing froth when using an amount of oil or other selective agent amounting to more than one per cent. by weight of the ore. In order that there may be no misunderstanding, will you state whether I have understood you rightly?

A. That is my recollection.

(Pages 828-829):

188 X-Q. Do not the experiments performed by Dr. Byrnes, regardless of whether you consider them Froment operations or not, show that a froth can be produced using quantities of oil largely in excess of the quantities specified in the patent in suit?

A. I have myself not made such an experiment, and I am not speaking from personal experience. I am of opinion, as I stated, that if a froth is produced with quantities of oil such as are used in four of the five experiments, it must lack some of the characteristics of the agitation froth; that is, for instance, it would not show the metallic luster and would be oily. Dr. Byrnes says he has produced a froth with a large quantity of oil. If it is produced, it is not produced by the Froment process, but by the process of the patent in suit. A froth such as can result from the quantities of oil used in four of the experiments would be valueless for the reason of its great expense.

(Pages 836-837):

200 X-Q. In commenting, in your answer to Q. 34 upon Dr. Byrnes' experiment described in the paragraph beginning at the bottom of page 165 of Defend-

ant's Record, you state that "the concentrates produced on the surface of the liquid are both in appearance and character entirely different from the agitation froth of the patent in suit," and you further state that "the oily character of the minerals is clearly visible to the naked eye." As you have stated that you did not repeat Dr. Byrnes' experiments in the slide machine, will you kindly state what experience you base your quoted statements upon?

A. I have seen many times concentrates produced even with much smaller quantities of oil than used by Dr. Byrnes, and in each case I found the appearance greatly different from the appearance of the agitation froth. Even quantities as small as 1.5 per cent. alter the look of the mineral particles.

Dr. Charles F. Chandler, Recalled.

(T. R., Vol. III, page 882):

Cattermole Patent No. 777,273, of December 13, 1904. This is the granulation patent and constitutes the next real step forward in the art after the Elmore patents.

A great reduction is made in oil quantities from those used in the Elmore process. Instead of 6,000 lbs. of oil to the ton of ore, we have a recommended proportion of from four to six per cent. of the weight of the metalliferous mineral present in the ore, which, with Broken Hill crude ore, which contains about 50 per cent. of mineral, would be 2 to 3 per cent. on the ore. With Broken Hill tailings containing about 30 per cent. of mineral, this recommended percentage would be 1.2 to 1.8 per cent. on the tailings, which in this instance would be the ore.

(Pages 896-898):

Froment Description and Drawings of 1903. Here we have for the first time a description by Froment of a process and apparatus capable of dealing with ore in practical quantities. . . .

The de-slimed ore is fed into the mixing apparatus, which he calls a centrifugal mixing apparatus containing two stirring devices worked in oppositie directions and making about 300 revolutions per minute.

Then the mixer is charged with ore and water, about 1% of carbonate of lime, maximum 2% in difficult cases, and about 1 to 1½% of mineral engine oil are added. The mixing apparatus is then allowed to work for ten minutes, the chief point being that all the sulphide grains shall come into thorough contact with the oil.

This is a clear statement of the necessity of thoroughly mixing the oil and ore. . . .

The process as thus described is for a lean ore. If the ore contained more than 5% of metallic matter, Froment says it would be necessary to use more oil, and recommends 2% for ore containing up to 15% of metal, indicating this as the upper limit for copper ores in the Latin countries, while for lead ores, which are richer, Froment recommends 2½% of oil for an ore containing 30% of metal, 3% of oil for 40% of metal, and 3½% of oil for 50% of metal.

(Pages 908-909):

125 Q. Having now considered the prior art, both as set forth by the defendant and as supplemented in complainants' rebuttal testimony, what have you to say as to the novelty of the invention disclosed in the patent in suit?

A. The process of the patent in suit is a new process not disclosed in any or all of the documents referred to by complainants or defendant as prior documents. It was to me a most surprising process. After studying all these prior documents, my surprise is not diminished that such a process is possible. There is nothing like it disclosed in the prior art and the failures of other inventors tended to discourage rather than to encourage the hope that the economical concentration of ores was capable of realization in a process utilizing the affinity of oil for metallic substances.

Of all the prior processes, the nearest approach to the process of the patent in suit was the Cattermole granulation process. Here there was agitation of an ore pulp with an amount of oil as small as 1½% of the ore, or 30 lbs. to the short ton, and with reasonably small quantities of acid, utilized only for its physical action in increasing the preference of the oil for the mineral.

(Pages 910-911):

The simplicity of the process of the patent in suit is as remarkable as its economy. For continuous operation only two pieces of apparatus are required, an agitator for briskly agitating the ore pulp and beating air into it, and a spitzkasten or separator in which the froth may rise to the surface and float off into a launder. The oil consumption is one one-thousandth part of the weight of the ore treated, equal to 0.1%, equal to 2 lbs. to the short ton of ore. The acid consumption, since no chemical action is required or desired, is extremely small. Some heating is usually required, but this is not carried to such a point as to be a serious item of expense.

The remarkable thing about the froth produced in this process is its permanency. The bubbles of air, with water films, are thickly coated with mineral particles and appear to be armored by these metallic particles. The froth piles up thickly and carries the great weight of the mineral particles, which are the heaviest particles of the ore. The oil has entirely disappeared from sight and sense. It cannot be seen and it cannot be felt, and the particles of mineral are just as bright as though there was no oil upon them at all.

(Pages 918-919):

136 X-Q. Referring to patent No. 788,247, what is your interpretation of the function performed by the oil which is used, that is, the oil which results from the decomposition of the soap?

A. I understand that it coats the particles of minerals with an oily film, which repels water, while the particles of gangue, being wetted with water, do not receive a coating of oily matter from the soap. The consequence is, if these particles of oiled mineral get to the surface they float there by surface tension.

137 X-Q. You stated in the first deposition which you gave in this suit, that, in the processes of Cattermole patents 777,273 and 777,274, "so large an amount of oily matter is employed as to agglomerate together the metalliferous particles contained in the ore into granules or pellets." Is it your understanding that the amount of oil used in Cattermole, Sulman & Picard patent No. 788,247 is also of such a quantity as to cause the metalliferous particles to agglomerate together?

A. There is no statement in the specification of the quantity of soap added or the quantity of fatty acid to liberate it, nor is there any suggestion of agitation by which oiled particles of ore might be agglomerated into granules. After the oiling of the particles has been accomplished, the patentees merely suggest that these oiled particles may be brought to the surface by gas bubbles or brought to the surface by added particles of wood or saw-dust previously coated with fatty acids by means of the soap treatment.

138 X-Q. Do you find the specification of Cattermole, Sulman & Picard patent No. 788,247 to contain sufficiently explicit directions to enable one to apply the process there set forth, and particularly that species of the process which includes, after oiling, flotation by gas bubbles?

A. The specification is certainly not very explicit. In the first place, it mentions a variety of substances to be added to the water, as soaps or similar compounds, such as cresols, phenols, resinous bodies, etc., and gives no idea of the preferable material and no idea of the proper quantities to be employed. There is a wide difference in the different materials which are mentioned as equivalent to each other; for example, an oleic acid soap and a phenol compound. Phenol when set free from its alkaline compound by an acid is quite soluble

in water, while the true fatty acids set free from soap are practically insoluble in water, or nearly so. It would seem to me that very different quantities of these different substances would have to be selected according to their respective properties. It seems to me that it would be necessary to conduct a number of experiments to successfully practice the process, even if that be possible, and I have my doubts whether the process is practicable at all.

A. Howard Higgins, Recalled.

(T. R., Vol. III, pages 929-930):

31 Q. Have you made tests in a modern continuously-operating plant for the production of the agitation froth, using cottonseed oil in the proportions used by Dr. Byrnes in his second test in the slide machine alleged to be in operation of the Froment British patent described by him on pages 165 and 166? If so, please give the details of this test.

A. Yes, I have made tests at Butte, Montana, in a plant substantially the same as that shown in the drawings "Complainants' Exhibit King John's Court Standard Plant," with the exception that there were six spitzkasten instead of five. The apparatus is a small one, having a capacity of 10 lbs. of ore per minute. The ore used was from the Elm Orlu mine, which is adjacent to the Black Rock mine of the Butte & Superior Copper Company. With the exception of the presence of some clay in the ore, it was practically identical with the Black Rock ore. After being crushed to 80 mesh, it was fed to the plant at the rate of 10 lbs. per minute, sulphuric acid and cottonseed oil being fed in the proportions used by Dr. Byrnes in his second test. In about three minutes the plant had settled into a permanent condition. The float on the first spitzkasten was copious, being about one inch to an inch and half deep, and though oily in appearance when closely examined, did not differ in appearance from the usual agitation froth at a distance of a few feet. These floats were exceedingly dense and occasionally fell down in large masses. The tailings contained some granules, and did not indicate a satisfactory

recovery. Samples were taken of these products and assayed.

Original ore,	Zinc 20.41%	Insolubles 59.95%
Concentrates,	" 47.54%	" 11.82%
Tailings,	" 12.94%	" 77.24%

giving a recovery of 50% of the zinc in the concentrates.

The small plant that I used is nominally a five ton plant, although its maximum capacity is seven tons per day. This plant is not intended for commercial use in treating zinc ores, being only a testing plant. The percentage of oil used in the test was 3.6 on the ore, corresponding to 20cc. of cottonseed oil used by Dr. Byrnes.

George A. Chapman, Recalled.

(T. R., Vol. III, pages 934-936):

249 Q. Have you made tests in a modern, continuously operating plant for the production of the agitation froth, using cottonseed oil in the proportions used by Dr. Byrnes, in his second test in the slide machine alleged to be an operation of the Froment British patent and described by him on pages 165 and 166 of Defendant's Record? If so, please give the details of this test or tests.

A. I made a test in the London Standard plant. This is the same plant described by Dr. Liebmann in his testimony, page 499 of Complainants' Record, containing eight agitators and six flotation boxes, and it was used in the same conditions as when Dr. Liebmann used it in his London experiments. This is known as a fifty ton plant and could be worked at that capacity at a mine, but it is used for testing purposes only and never run to its full capacity.

The ore that I used was Broken Hill tailings, containing about 18% of zinc and about 5% of lead. This ore was crushed to pass through an 80 mesh screen. The plant was operated for an hour and 1680 lbs. of ore were fed in during this period. Cottonseed oil was used in the proportion of 3.6% of oil on the weight of the ore, and the acid consumption was 0.37% on the weight of the ore (1 cc. is 1.8 grams, which is 0.368% of 492 grams of ore). The temperature of the water was maintained at 70° Fahrenheit.

An oily float was obtained, some of which was carried below the surface of the water. I made adjustments so as to carry this float over; certainly more than 30% of it was carried below the surface of the water. There were large, clean, oil-film bubbles in it and it did not look

at all to me like an agitation froth such as is obtained under normal and economical conditions of oil consumption. The float looked oily, and it was oily to the touch, whereas the normal agitation froth does not show the presence of oil nor can you feel that there is any oil in it.

The tailings were oily and dirty and contained incipient granules. I took some of these tailings and rolled them in a Gabbett without baffles and obtained good granules.

I separated the concentrates which overflowed from the six flotation boxes and had them separately assayed, and also had the tailings assayed.

(Pages 937-938):

After I had made these two tests, it was suggested to me by our patent agent, Mr. Ballantyne, that I would more nearly parallel Dr. Byrnes' tests by having less agitation. Dr. Byrnes agitated in a slide machine for thirty seconds for his first agitation and from ten to twenty seconds each for his subsequent agitation. We usually agitate one and a half to two minutes for the first agitation in the slide machine, and half a minute to one minute for subsequent agitations. To repeat this condition of under agitation, I made another test with proportions of all material, temperature and time the same as in my experiment No. 1, but using only six agitators, one agitator for each of the six flotation boxes. The results were a slight improvement on the results in test No. 1. The floating material was the same and the tailings contained incipient granules which I granulated as I have described before.

(Page 939):

250 Q. Have you also made a test in the same plant using oleic acid in the proportion of 1.8% on the ore, and the proportion of sulphuric acid given by Dr. Byrnes

and used by you in your experiments 1 and 3 with cottonseed oil? If so, please describe the experiment.

A. I made this test using a very good oleic acid, purer than the ordinary red oil of commerce. The floats were very bulky and contained a very high proportion of gangue and very little enrichment of the crude ore took place. The procedure was altogether wasteful, and the result of no commercial value at all. If the agitation froth process, when properly used, gave any such results as this, it would never have been adopted for practical use. The float obtained was oily in appearance and oily to the touch, but not as oily as in the other tests where I had used cottonseed oil and had used twice as much oil.

(Page 944):

255 Q. Does normal agitation froth operation make a plant greasy, as did the tests you have described?

A. No. The oil disappears. The dirt in the plant is never greasy.

Henry L. Sulman.

(T. R., Vol. IV, page 1604):

Q. 6. I understand from your answer to question 4 that about July, 1903, you had learned of the intentional use of a gas with an oily substance to produce flotation. If I am correct in this will you describe the process so referred to?

A. A pulp of the ore containing the mineral which it was desired to separate was mixed with a small quantity of oil insufficient to float the mineral by the buoyancy of the oil alone and mixed sufficiently to ensure the attachment of small quantities of oil to the mineral. A gas was then liberated in or generated in the pulp so prepared, and it was found that such gas had a tendency to attach itself to the oiled particles. If air were used this was liberated by blowing a stream of bubbles through the mixture in several ways, and if a gas other than air were employed this was generated in the liquor by chemical reactions or by electrolysis.

(Page 1605):

Q. 8. By whom was this process originated?

A. By Mr. Picard and myself, and at a later date Mr. Cattermole co-operated with us in a further development.

Q. 9. Was this the first process of which you learned in which the joint action of oily matter and a gas were utilized for the purpose of floating part of the constituents of an ore?

A. That is my memory of the first time that I learned of the essential use of a gas towards flotation of oiled mineral, although I subsequently found this knowledge had been antedated by Mr. Froment.

Q. 10. And about when, if you remember, did you learn that Mr. Froment had practiced such a process?

A. I learned of the Froment process from the abstract of a patent which was published in the Journal of the Society of Chemical Industry which I saw in August, 1903.

(Page 1606):

Q. 13. Will you describe somewhat in detail the procedure followed in operating the Froment process with bottles, test tubes, and the larger vessels to which you have referred?

A. We made our experiments by following the instructions given in Froment's British specification. We added the ore to a liquid, water, to form a pulp (freely flowing pulp), and also added to this a substance capable of being decomposed by a dilute acid for the purpose of generating a gas, such, for example, as calcite, whiting, or carbonate of soda. A quantity of oily matter sufficient to form a thin layer was then added upon the surface of the pulp, and the whole was then well mixed. A small quantity of acid was then added to the mixture with suitable gentle stirring to bring the acid and the gas-producing substance into contact, and thereupon the oiled mineral was floated to the surface by the bubbles of the generated gas.

(Pages 1607-1608):

Q. 17. Referring to your description of your procedure in operating the Froment process, you have stated that you gently stirred the mixture to bring the acid and the gas-producing substance into contact. Is stirring or agitation necessary in that process for any other purpose than to bring the acid into contact with the gas-producing substance?

A. Agitation in my experience of the Froment process should be given in two stages. Sufficient agitation firstly

to get the oil into efficient contact with the mineral to be subsequently floated. This first agitation is not responsible for the production of the float material required. The second agitation is for the purpose of effecting the due contact and uniform contact of acid with the decomposable substance and much less agitation is required and in my experience is necessary for the second purpose, having regard to the nature of the float material produced.

Q. 18. In all oil flotation processes sufficient agitation is necessary, is it not, to distribute the oil in such a manner that it will come into contact with the particles for which it has an affinity?

A. The first requisite of any oil concentration process is to obtain efficient contact between the oil and the mineral and suitable methods must be employed to effect this. Where the oil is in large relative quantity to the mineral violent agitation is unnecessary and may be very harmful. With decreasing proportions of oil more vigorous agitation or mixing is necessary to ensure such efficient contact of oil with the mineral particles. The agitation may therefore be said to be roughly proportioned to the work to be done in bringing about contact between large or small quantities of oil in regard to the mineral.

(Pages 1612-1615):

Q. 32. When you for the first time saw a process operated according to the United States patent 835,120 in suit, who was present and who actually conducted the operation?

A. Mr. Ballot was present and was supervising the experiment which was being performed by Mr. H. A. Higgins, who was working under our joint direction.

Q. 33. What led to your presence and that of Mr. Ballot upon this occasion?

A. At some date a week or two prior to our discovery of the air agitation froth, Mr. Ballot, Mr. Picard, and myself had been in close consultation as to a number of factors which we considered required finally investigating and quantifying. They concerned mainly the operation of the Cattermole process, but also had in view the clearing up of a number of loose-end observations noticed in previous developments of oil concentration work. Mr. Ballot, Mr. Picard and myself found it necessary to draw up a schedule of such factors as we considered required investigation, and we instructed the experimental staff at Aldermanbury to carry these out; the carrying out of these final investigations was done under the immediate supervision of one or other of us throughout the whole of them. The factors to be investigated were as follows: In a report dated March 3, 1905, made by Sulman & Picard and addressed to John Ballot is recorded the work which the whole three of us were doing then, and this report is not so much for the information of Mr. John Ballot as the putting on record of work which he and we had jointly done, for purposes of reference afterwards. In it we say on page 2:

> "We are in full agreement with the rest of Mr. Higgins' observations and may summarize the work now being done at Aldermanbury Avenue as the determination of the following factors:—
>
> "1. Influence of acidity on granulation.
>
> "2. Influence of temperature on ditto.
>
> "3. Influence of speed of gabbet agitation on granulation.
>
> "4. Influence of ratio of ore to liquor on granulation.
>
> "5. Influence of metallic salts on granulation.
>
> "6. Influence of the size of particles and of the influence of slimes on granulation.
>
> "7. Influence of the amount of oil on granulation.
>
> "The above factors are being determined on—
>
> "(a) Oleic acid.
>
> "(b) Residuum oils.

"Mr. Higgins' present report is therefore the first instalment of the above scheme of trials."

Mr. Higgins was sending in, in like fashion, to Mr. Ballot the daily records of these trials proceeding under the joint supervision of the three of us. It was in the carrying out of the latter factor, namely, the amount of oil in its effect upon granulation that in reducing the amount used beyond all previous quantities in regard to the mineral, that we found granulation to decrease or even cease when a certain limit was reached, and that coincidentally a mineral froth began to take its place. When we decreased the amount of oil to about .6 per cent. upon the ore, granulation had ceased to appear and a very considerable proportion of mineral was found to float in the surface as a thick froth. We still further decreased the amount of oil until we found that with .2 to .1 per cent. of oil on the ore practically the whole of the mineral came to the surface as a thick blackish matted froth.

(Pages 1615-1616):

Q. 34. Can you remember at this date the substance of Mr. Higgins' report which you refer to in the document identified as "Sulman and Picard Report March 3, 1905," or, if you can, will you produce that report?

A. This report has been handed to me by counsel, and before referring to it I will state that at this date the discovery of the agitation froth had not been made. Mr. Higgins' report therefore deals with some of the prior factors of granulation set out by us in our schedule of items to be investigated. Mr. Higgins' report is dated March 2, 1905, and is headed "Report on the Conditions of Granulation." It deals in detail with the results of (1) the influence of acidity in granulation, (2) upon the influence of heat on granulation, setting forth in detail

the experiments which he tried under the directions he received (3) with the influence of the thickness of the pulp, and (4) with the influence of peripheral velocity of cone. On the last page of his report he notes that experiments are also to be carried out on the influence of the quantity of oil present in order to complete the information regarding granulation.

(Pages 1616-1617):

Q. 36. As I understand you, to put the matter briefly, Mr. Higgins was instructed to ascertain the effect upon granulation of varying the various factors of the Cattermole process and that while carrying out these instructions he found that with the quantity of oil too small to properly granulate the concentrates, flotation resulted. Is this the correct understanding?

A. Mr. Higgins was a capable experimenter fully qualified to carry out intelligently all instructions given to him. The instructions given in regard to each of the factors was that they were to be investigated to their full limit in order to quantify and also to explore the limits of application of the Cattermole process. These experiments were carried out by him in the constant presence, although not the continuous presence, of all of the patentees, Mr. Ballot, Mr. Picard and myself, and he recorded the results of such experiments.

(Pages 1618-1620):

Q. 40. Were either yourself, Mr. Picard or Mr. Ballot present at the time Mr. Higgins first experimented, in pursuance of the instructions set forth at the bottom of page 2 of the Report of March 3, 1905, with an amount of oil falling within the limits designated in United States patent 835,120 in suit?

A. Mr. Picard and I were not present at the first dis-

covery that by dropping the oil quantity below the last granulation limit the agitation froth was produced, but I have reason to believe that Mr. Ballot was present, as he came round to my office, and at once called me to go with him to see what had been the result of such oil diminution, and I went with him at once. The experiment was again carried out in my presence. I understood that it had been found to occur only a comparatively short time before I was called to see the result of the carrying out of this No. 7 instruction to its further limit.

Q. 41. I take it that this was not the first information you had ever had to the effect that froth flotation could be secured by the use of a very minute quantity of oil; am I right in this?

A. In regard to the formation of a froth of this nature, which is so specific in its character and in the presence of an amount of oil so relatively exceedingly minute as in this instance, this was the first time that I had had experience of any such phenomenon. You have used the word "froth" as if this were a term widely applicable to float material produced at a liquor surface, but it has a very wide and loose use, and is frequently very misleading. If by "froth" is meant an assemblage of bubbles at a liquor surface, such bubbles being separated from each other by a contaminated liquor film, the majority of such froths would be useless for any purpose of separating mineral from gangue. Thus, we may have a soap froth which will carry but little mineral or gangue, and will differentiate between neither, we may have a saponine froth which will hold neither mineral nor gangue, and many other froths of the same nature. I have heard the float material produced by the Froment reaction described as a froth, but it is a tender and evanescent assemblage of bubbles of carbon dioxide carrying mineral, and is not comparable in nature or char-

acter with the agitation froth described in the patent in suit. For a froth to be effective at ordinary ranges of temperature between, say, air temperature and well below boiling, the froth must be coherent and permanent for a considerable time. Such froths are typified in my experience only by the agitation froths produced by vigorously agitating an ore pulp with very minute amount of oil, that is to say, less than one per cent. on the ore in the presence of air. Therefore, in answer to your question, this was the first occasion upon which I had seen a heavy, thick, matted froth, which was permanent and coherent, produced.

(Page 1622):

Q. 44. In the operations which you referred to in your answers to questions 6 to 8, these operations having been originated by yourself and Mr. Picard, what kind of an apparatus did you use?

A. The apparatus we used was of laboratory type in all cases, that is to say the vessels of various shapes were of glass, and the tubes and connections were of glass or India rubber; cylinders, beakers, bottles, basins, plaques, and so on. In one or two instances small adjuncts were made of tin or tinned iron.

(Page 1623):

Q. 46. What degree of success did you meet with in operating this process with the apparatus you describe?

A. Our success in these operations was of very imperfect nature, and our specification rather represented a pious hope that we should ultimately attain success on these lines. The floats obtained were in general thin and tender, and were mainly of the nature of the surface-tension effects at a water surface. We tried a great many experiments on various lines indicated, but in no

case were we able to attain to a persistent and coherent froth. After a considerable amount of time and experiments we discontinued our efforts in this direction, owing to the small degree of success experienced and from the apparent improbability of such processes developing into a commercial method for mineral separation from gangue.

Q. 47. About what quantity of oil relative to ore did you use in these operations?

A. So far as I remember, the quantities used of oily matter were always substantial, that is to say, they would always be in excess of one per cent. upon the ore taken. At that time we had no knowledge of the effective use of quantities of oil below the proportions employed by Cattermole, and regarded these Cattermole quantities as being likely to be required in flotation work of the nature we were experimenting upon.

(Page 1635):

Q. 77. Did the flotation of mineral in the form of a film ever occur at any time other than at the beginning of the operation of the apparatus when the froth was first beginning to spread over the water surface, and at the end of the operation, when the froth was leaving the water surface?

A. In my experience at such times, and also by temporary interference with the other conditions which I have mentioned, such as irregularity in supply of ore or oil, or considerable fluctuations in temperature. Given the proper conditions ascertained in regard to each plant and ore operated upon, a production of a coherent froth was continuous whilst such conditions were maintained.

(Page 1647):

Q. 107. In operating with the process which patent 835,120 in suit purports to set forth, did you devise any means for maintaining the amount of acid and oil relative to ore set forth in that patent when operating upon the pulp flowing at a varying rate, and containing a varying percentage of ore to water?

A. In the plant devised to give effect to the process described in the patent in suit at the experimental works of Minerals Separation there were no difficulties in obtaining uniformity of pulp, of ore supply, and, therefore, of ratio of ore to liquor. In these cases, owing to the fact of the location of plant in London, the ore was dry crushed, and hence could be measured with fair accuracy and proportioned to water in such a manner as to insure uniformity.

(Page 1649):

Q. 110. Will you kindly, for the purpose of making our terminology clear, distinguish between what I think has been referred to by us as "froth flotation" and "film flotation"?

A. We have generally confined ourselves in speaking of froth to the specific type of froth produced by the process described in the patent in suit. This froth consists of an assemblage of bubbles of air, with some traces, perhaps, of other gases, but mainly air, the bubbles being of varying sizes from exceedingly minute ones to quite large bubbles. The liquor surfaces of these bubbles are highly contaminated and associated with the slightly oiled mineral.

(Page 1654):

Q. 119. As I understand you, to state it briefly, the operator of the process, in order to maintain the proportions of oil and acid to ore, as set forth in the pat-

ent in suit, naturally must be informed as to the amount of ore which he is treating, in order to maintain the proportions referred to; am I right?

A. It is, of course, well that he should be informed of this, or should take such steps himself as would enable him to apply the agitation froth process described in suit, under these or any similar abnormal conditions. The adjustment of the oil, even under such abnormal conditions, is, however, very easily effected, because the phenomenon of the agitation froth production is in itself an indication of the right amount of oil to employ.

(Pages 1654-1655):

Q. 120. Then, it might be, that an operator following what you have termed the synthetic mode of regulation might not know whether he was adding oil or acid within the proportions set forth in the patent in suit?

A. It might be so, for the space of a minute or two as to the acidity, this can be determined instantly by means of Litmus paper, or other suitable indicator, it only being necessary to have a slight degree of acidity present in the pulp. As to oil, the proportions specified in the patent do not need extremely fine adjustment. When the generally minute quantities of oil to ore are considered, which amount in practice, roughly, to about two pounds per ton of ore in a great number of cases, or perhaps somewhat less or more, conditions of ore supply may fluctuate to some extent without greatly affecting the result. If these fluctuations in supply are excessive then the operator would naturally make such further slight adjustment of his oil addition as would meet the altered circumstances.

(Pages 1656-1657):

Q. 123. You have stated in answer to question No. 119 that if it were not convenient to quantify the ore supplied from time to time it would be quite easy and effective to slightly vary the oil additions to the incoming pulps in order to produce the maximum agitation froth formation. In operating according to this method the operator would be guided, would he not, by the results secured rather than by the maintenance of any known quantitative relations between the different materials?

A. That is what I meant, the result to be obtained being the production of the specific agitation froth required.

(Pages 1662-1663):

Q. 143. You have referred to the fact that you and Mr. Picard were developing or working upon a flotation process at the time you first learned of the existence of the Froment process. Is the process which you and Mr. Picard were then occupied upon the one set forth in United States patent 793,808, granted to yourself and Mr. Picard July 4, 1905?

A. That is the only flotation patent that Mr. Picard and I worked at alone, but there was another flotation process about the same time in which we were also concerned with Mr. Cattermole, United States patent No. 788,247.

(Pages 1678-1680):

R-D. Q. 182. Whenever flotation concentration takes place in a pulp to which too little oil to float the mineral by the oil buoyancy has been added, and the pulp has been agitated with the result of raising all of the oiled mineral to the surface as a scum or froth, would

you assume that air beaten in by the agitation had caused or assisted the flotation?

A. This is a very wide question, and would apparently include all quantities of oil below the effective bulk oil limits down to the proportions of oil used in the patent in suit. All sorts of phenomena would take place according to the amount of oil employed and degree of agitation given. Some oil entrapping mineral with entangled air bubbles might result, and in such cases the air would aid oil buoyancy effects, just as corks caught in a fishing net might enable the latter to float. According to the extent or deficiency of oil, intermediate phenomena would take place, such as the production of "mushes" or of sunken material, but to the extent that oiled material was floated, entangled air bubbles would naturally help to this extent.

R-D. Q. 183. Assuming that flotation concentration has taken place in a pulp to which an amount of oil equal to two per cent. by weight of the ore has been added, and the pulp has been agitated, thus producing the flotation, would it be your opinion that air beaten in by the agitation had caused or materially assisted in producing such flotation?

A. My experience of such conditions as you have named, and with the degree of agitation that I have been accustomed to give, is that granulation would mainly result, and it is not my experience that effective flotation would ensue if the pulp were then brought to rest.

R-D. Q. 184. Is the degree of agitation, which you have referred to in your last answer, some particular degree or duration of agitation?

A. It is of the necessary degree and duration required to bring such quantity of oil into effective contact with the mineral particles present in the pulp.

R-D. Q. 185. Suppose we assume, as set forth in question 183, that under the conditions there set forth flotation is produced, contrary to your experience though it may be, then would it be your opinion that air beaten in by the agitation had caused or materially assisted as an essential factor in producing the flotation?

A. You are asking me to assume something that I have no experience of, all my experiments in such directions being to the contrary effect, namely, that when a pulp so agitated were brought to rest, sinking of the mineral, and not flotation, would result. Indeed, this amount of oil, in my experience, would generally fall within the Cattermole range, and it is only when the oil falls below one per cent. on the ore, and practically to about .5 per cent. upon the ore in most cases, that flotation by such means take place.

Hugh Fitzalis Kirkpatrick-Picard.

(T. R., Vol. IV, page 1682):

Q. 2. Are you the Hugh Fitzalis Kirkpatrick-Picard named as one of the grantees of the United States letters patent No. 835,120, involved in this suit?

A. I am.

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Q. 4. And when did you first learn of the joint action of oil and a gas concomitantly acting to produce flotation of part of an ore?

A. I learned of its use as an accidental concomitant during our work on the granulation Cattermole process about 1902, wherein some of the granules were occasionally, accidentally, floated by air.

(Page 1683):

Q. 6. And I presume the intentional use of oil and a gas, to which you refer, is to some extent at least set forth and described in United States patent 793,808, granted to Mr. Henry L. Sulman and yourself, July 4, 1905, upon an application filed October 5, 1903, copy of which patent you have before you?

A. Yes, and I see by this date that in one of my previous answers I put my knowledge a little too late. I must have first known of the intentional flotation by means of an oil and a gas early in 1903.

(Page 1684):

Q. 9. In the patent in suit, No. 835,120, in an example of the application of the process the amount of oleic acid used in that instance is specified as from .02 to .5 per cent. on the weight of the ore, the latter quantity being twenty-five times the former. How would an operator practicing the process determine between these wide limits what quantity of oil to use?

A. As a matter of fact, both quantities mentioned are so minute in relation to the proportion of ore that it is hardly right to describe the limits as very wide, but the operator would have no difficulty in determining, if there was any marked difference, which was the best quantity to use, by simply noting whether he was obtaining the specific frothing phenomenon which the patent indicates as being that required.

Q. 10. In other words, the ordinary skill of the operator would lead him to the right amount, as I understand it?

A. Yes, I think an operator after studying this specification, and possessing average technical knowledge, would have no difficulty in so adjusting the amount as to obtain this specific and very definite form of froth.

(Page 1686):

Q. 16. When did you first see operated or demonstrated the process which patent 835,120 in suit purports to describe?

A. About the first week in March, 1905.

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Q. 18. Who conducted this first demonstration which you saw?

A. One of the works staff of Minerals Separation, named Mr. Howard Higgins. Mr. Higgins was at that time engaged under instructions from Mr. Sulman, Mr. Ballot and myself, in investigating, amongst other things, the influence of the quantity of oil on Cattermole granulation, and it was as a result of repeatedly reducing the quantity of oil that eventually we arrived at the production of the specific, permanent and coherent froth which is referred to in the patent in suit.

(Page 1689):

Q. 26. Is it your impression that at the time of this meeting between yourself, Mr. Ballot and Mr. Sulman, it was a new idea to investigate how much oil, acid and what character of agitation should be used in the Cattermole process?

A. My general recollection is that we had been for some time working, more or less in the dark, without understanding the influence of the various factors of the process, and we decided that it would be well to adopt some form of definite line of research, with a view, if possible, of clearing up various points of difficulty in connection with the work.

(Pages 1694-1695):

When the plant was not operating normally and perfectly what happened?

A. You mean specifically with regard to the nature of the concentrates?

Q. 47. Yes.

A. Well, for example, if through any accident the ore feed failed and the oil feed continued, an excess of oil would be supplied and some of the mineral would form rather as granules and sink, or occasionally through any blocking of the delivery pipe a little concentrate might escape, or such concentrates as had already just been delivered might be pulled out rather in the form of film on the spitz box than as froth, but these incidents were quite abnormal, and, generally speaking, I am right in saying that the thick, coherent froth always resulted.

(Page 1700):

Q. 64. In operating the process, which the patent in suit purports to describe, was it your invariable custom to establish a quantitative relation between the

amount of oil and the amount of ore, or did you sometimes proceed simply by using such a quantity of oil as would produce the result you desired, without knowing just the quantitative relation of that amount?

A. In all our tests we endeavored to maintain an approximately definite relationship as to quantity between the amount of ore and the amount of fuel fed into the plant.

(Pages 1700-1701):

Q. 67. Will you state the distinction between the froth or scum which is referred to in the patent in suit and the floating material resulting from operations such as described in United States patent 793,808, granted to yourself and Mr. Sulman on July 4, 1905, as the result of an application filed October 5, 1903?

A. I have already described the froth produced in the patent in suit as being of a very dense, coherent and thick deposit. The floating concentrate obtained in patent 793,808, on the other hand, was of a very feeble and tender character, the very reverse of coherent and persistent, and was of such a nature that extreme care had to be used in its collection. It never reached any appreciable thickness, and was rather of the nature of a thin film.

Q. 68. To what do you attribute the difference between the condition of the floating material produced in accordance with the process of the patent 793,808 and that produced under the process which patent 835,120 purports to disclose?

A. I attribute the difference largely to the greater quantity of oil that was used in working the patent 793,808. The oiled mineral produced under this patent was more of the Cattermole variety, and in our experience air introduced in the manner shown in Figure 1

does not attach itself very readily to these particles of mineral heavily oiled, and though the air did, to a large extent, carry the mineral flocks to the surface, they, the flocks, seemed to sink again with ease in such a manner as to suggest that the air which caused them to float had freed itself from the particles.

(Page 1702):

Q. 70. I take it, then, that you attribute the defective action which you have referred to in the operation of the apparatus of Figure 1 of 793,808, to the use of too much oil?

A. Yes, I think that in large measure accounted for the relative non-success of this process, but, on the other hand, I do not think success would have been obtained with this particular apparatus, even though the quantity of oil had been much reduced.

Q. 71. From which I infer that it is your idea that the success of a froth-flotation process of this kind is dependent, not only upon the use of the proper quantity of oil, but also upon the use of mechanism adapted to bring about other conditions equally necessary to the production of a froth?

A. Of course suitable apparatus must be employed to carry out the object set forth in the patent specification, and we show one method by which these objects may be obtained, but no doubt other forms of appliance would effectively carry out the intention of the patent which is essentially the production of the dense persistent and coherent froth which is the peculiar attribute and essential feature of this invention.

(Pages 1703-1704):

Q. 75. Could you distinguish, by observation, that is, by visual observation, between froths produced by the

use of five-tenths of one per cent., one per cent., one and a half per cent. and two per cent., respectively, of oil?

A. I should have no difficulty, I think, in distinguishing the five-tenths per cent. froth from the two per cent., and probably from the one and a half per cent., but I do not know what is the absolute limit in quantity, which would render it difficult for me to distinguish between them. I may state that by using the upper limit of two per cent. in the apparatus described in the patent in suit I should expect to find an appreciable quantity of granules formed, and this would aid me in forming an opinion as to the amount of oil used.

(Pages 1705-1707):

Q. 79. You have referred to having been called in to witness the operation of forming a froth according to the process which the patent in suit purports to set forth shortly after the discovery of such a mode of procedure was made. Will you state just what you saw on this occasion that was new to you; that is, what was it you regarded as a discovery?

A. What struck me as being new was seeing practically the whole of the mineral which was in the ore charge floating on the top of the liquid in the gabbet whilst at rest, whereas hitherto when using larger quantities of oil I should expect, and, indeed, would have seen the mineral in a more or less granulated condition through the charge, and not floating on the surface, except as to certain accidental flocks. The difference was most marked, and created a very distinct and decided impression on my mind.

Q. 80. I presume that you and your associates proceeded to investigate the causes which had produced this result, and if so, what were the causes to which you attributed it?

A. We already knew from the first test that the cause was due to reducing the quantity of oil much below that hitherto employed, and observation of the froth clearly indicated that the air which had been beaten in played an important and essential part in the production of this new phenomenon. I presume that further investigation work was carried on, but, in my opinion, the invention may be said to have been complete after that first operation.

Q. 81. At the time the process which the patent in suit purports to set forth was first exhibited to you, I take it that you were not then for the first time made cognizant of the possibility of using so small a quantity of oil as had been used, or that you then first became cognizant of the utility of beating air into the pulp; am I right in this?

A. I had no idea prior to this, that by reducing the quantity of oil to the limits which were used in this experiment that such a result would be obtained. I, of course, knew that air would float mineral, previously oiled, but it was not anticipated by me hitherto that this particular result would be obtained if air were beaten in, in the manner in which it was done in making this test. The result of the operation as a whole was an entire revelation to me, and though I knew that work was being carried out on the reduction of the quantity of oil, I never for one moment anticipated in my mind, as being likely to occur, what in fact actually did occur.

John Ballot.

(T. R., Vol. IV, page 1710):

Q. 1. What is your name, age, residence and occupation?

A. John Ballot; age, 52; residence, at Hotel Cecil, Strand, London; my occupation is chairman and managing director of Minerals Separation, Limited, and chairman of Minerals Separation American Syndicate, Limited, the two complainants; place of business, 62 London Wall, London, E. C.

(Pages 1717-1718, part of answer to Q. 18):

Again in my letter to Mr. Courtney of March 10th, 1905, I say:

> "I am pleased to tell you that during the week we have made some very important discoveries which will, I think, almost revolutionize our processes by way of simplifying and cheapening the same. I hope that by next mail the work will be sufficiently far advanced to send you full particulars. Several points have yet to be determined, and the discoveries are of such a nature that we have decided to take our expert and counsel's opinion thereon, with a view to assuring ourselves that we can get good protection under patents. I may mention for your private information that we do not use more than .1 per cent. of oleic acid per ton of ore and although we have not assays out that the recoveries will be very satisfactory."

Again in my letter to Mr. Courtney of March 17th, 1905, I say:

> "*Higgins Report.* Herewith I enclose you copy of Higgins report as received this morning, being a continuation of the one sent you on the 3rd March. By using one per cent. of acid water, or even less than that, three of water to one of ore, and adding .1 per cent. of oleic acid, and heating the circuit to

from 30/32 C and then agitating from 8 to 10 minutes in a single gabbet we find that almost as soon as the cone is stopped in the gabbet from 70 to 80 per cent. of the contained mineral immediately rises to the surface in the form of a scum or froth which floats persistently and remains on the surface of the water for days at a time. . . .''

(Page 1723):

Q. 29. I take it that when Mr. Higgins apprised you of the operations set forth in his report of March 16th, 1905, this was not the first occasion upon which you had been informed of the possibility of using minute quantities of oil in mineral flotation operation; am I correct in this?

A. I had seen the work in progress from about the 1st day of March onwards.

(Page 1724):

Q. 34. And when you saw the work in progress from March 1, 1905, onwards, as referred to by you in your answer to question 29, was this the first occasion upon which you had been informed as to the use in an oil flotation process of the intentional beating in of air for the purpose of promoting flotation?

A. The intentional beating in of air to produce or promote the flotation of froth which was developed by that process was certainly not known until the fact had been actually discovered that by using a very small quantity of oil, say .2 or .1 per cent., and agitating it for a certain time, and then leaving the mixture to stand that the whole froth rose to the surface. By ''discovered'' I mean until the experiments had established the fact that this extraordinary phenomenon was every time reproduced by using the small quantity of oil, violently agitated, and then leaving it to stand, when the mineral rose to the surface in the form of dense froth.

(Pages 1726-1727):

Q. 42. The patent in suit gives a range of quantity for the oleic acid to be used extending from .02 to .5 per cent. in the example set forth in the paragraph beginning at line 70, page 1, the larger quantity being twenty-five times the magnitude of the smaller. In carrying out this process how is the determination to be made as to which of these widely differing quantities is to be used?

A. Starting with the small quantity, say at the rate of one pound per ton of ore, an operator can soon tell by the appearance as to whether the characteristic froth is produced or not. Guided by appearances he would either increase or decrease the quantity of oil or oleic acid until the cauliflower or characterisitc froth was produced, which in itself will be an unfailing index as to whether or not proper conditions have been attained, and he need only then repeat the measurements quantitatively of oil or oleic acid added to his pulp. Of course I assume that the proper agitation and other factors are satisfactory.

(Pages 1728-1729):

Q. 45. In your answer to question 42 and the following questions, I understand that the quantity of oil must be determined experimentally, and that the proper amount of oil is determined by noting the quantity which produces the froth, which you state has certain characteristic qualities. I understand, then, that it is impossible to carry out the process by simply applying the proportions of oil set forth in the patent, and that the final test is not the use of any particular proportion of oil, but the production of the froth; is this correct?

A. The only way to carry out the process is that of applying the proportions of oil set forth in the patent, but to determine, as all practical men will do, which of the proportions, within the range, yield the best result,

the characteristic nature of the froth is always an indicator which will of itself tell an experienced operator when the best conditions have been attained, or, having been attained, whether they are maintained in a continuous running, where variations may occur in the feed to the plant of ore and water or pulp.

(Pages 1738-1739):

Q. 72. How did the degree of agitation imparted to the pulp in the practice of the operations set forth in the patent in suit compare with that used in practicing the Cattermole process which is referred to in the patent in suit?

A. In the Cattermole process, if I remember rightly, there were two degrees of agitation. In the first series of mixers the agitation was fairly violent to disseminate the oil throughout the pulp and to coat the mineral particles. In the second portion of the process a very much slower rolling motion was given to enable the mineral particles to attach themselves to one another and to be rolled into small shot-like granules.

Q. 73. Which of the two kinds of agitation used in the Cattermole process was employed in practicing the operations set forth in the patent in suit?

A. The first, but in a more violent degree, because the quantity of oil being so much smaller than that used in the Cattermole it required more agitation to disseminate it throughout the pulp for the purpose of coating the mineral or being attached to the mineral.

Q. 74. In carrying out the operations of the patent in suit is there any relation between the amount of oil used and the viscosity of the oil?

A. I do not think there is any relation as to the viscosity, provided the oil is in a thin liquid condition so that it can be easily disseminated throughout the pulp.

If an oil like oleic acid were to be solidified or thickened by cold it would naturally be necessary to warm it up to liquefy it.

(Pages 1756-1757):

Q. 120. When did you first see a demonstration of the process which the patent in suit purports to set forth?

A. If by demonstration you mean the phenomenon of the mineral contents rising to the surface in the form of a froth, I first saw that somewhere between the 3rd and 10th of March, 1905, while Mr. Higgins was carrying out the programme of work set him by Sulman, Picard and myself, and especially while he was step by step reducing the percentage of oil used in the experiments.

A. Howard Higgins.

(T. R., Vol. IV, page 1790):

Q. 1. What is your name, age, residence and occupation?

A. Arthur Howard Higgins; 31; "Estrella," Hale Lane, Mill Hill, London, N. W.; metallurgist.

(Page 1791):

Q. 7. And afterwards, I believe, you entered the employ of Minerals Separation, Ltd.?

A. That is so.

(Pages 1793-1794):

Q. 23. In the Cattermole process I presume different results were secured with different oils or fatty matter, or that different oils and fatty matter had to be used in different quantities or in a different way?

A. Yes, different oils and mixtures of oils were used. I believe also in different ways and very slightly different quantities.

Q. 24. About what was the range of quantities of different oils found necessary and advantageous?

A. In general we used 5 per cent. of oil on the mineral, which was increased perhaps to six or seven per cent., and decreased to three or four per cent.

Q. 25. In order to make the record perfectly clear to any one not accustomed to this terminology, please state whether by the word mineral you refer to the entire body of ore being treated, or to the metalliferous constituents which it was desired to separate from the ore?

A. I refer to the metalliferous constituents.

(Pages 1794-1795):

Q. 27. When did you first learn of the use of oils or fatty matter in connection with the flotation of part of the constituents of an ore?

A. As far as I remember, I was instructed in this by Messrs. Sulman & Picard about December, 1903, and January, 1904. This does not include the Elmore buoyancy process.

.

Q. 30. What was the occasion of Messrs. Sulman & Picard instructing you in December, 1903, and January, 1904, in the use of oils or fatty matter for flotation of part of the constituents of an ore?

A. I believe it was simply to give me all the information they had on oil processes.

Q. 31. And what information did they impart to you at that time?

A. As far as I remember, it was an alternative to the Cattermole second agitation, and consisted in the use of gas or air, introduced or generated in the pulp containing the agglomerations or imperfectly granulated mineral, for the purpose of bringing this up to the surface as a scum.

(Pages 1801-1802):

Q. 65. By which of these gentlemen were the instructions given to you?

A. By Mr. Sulman.

Q. 66. Can you state the nature of the instructions?

A. These instructions were to carry out a series of tests on the factors influencing granulation.

Q. 67. And while performing these tests did you observe part of the metalliferous mineral floating as a froth or scum?

A. As far as I remember, in the bulk of these experi-

ments there was a small quantity of floating mineral. This only reached appreciable proportions when the reduction of oil was carried down to very small proportions.

Q. 68. I presume the quantity of floating material increased gradually as the quantity of oil was reduced?

A. No, my impression is the quantity of floating material increased rapidly when the oil was reduced below a certain point.

Q. 69. And what was the certain point at which the rapid increase took place?

A. .62 per cent. of the oleic acid on the ore.

(Page 1803):

Q. 73. What did you do when you first tried your experiments with oil and reduced in quantity to .62 per cent. on the ore; I mean, did you immediately make your oral report that you had referred to to Messrs. Sulman, Picard and Ballot?

A. I called in Mr. Ballot to see one of these experiments performed, wherein froth was produced, but I cannot say which one it was. I may, therefore, have tried a further reduction of oil before making an oral report on it.

(Page 1817):

X-Q. 139. In Q. 66 you were asked as to the nature of instructions received by you, and in your answer to Q. 67 you speak of the reduction of oil being carried down to a very small proportion, and in Q. 137 this work, I take it, was referred to as experiments for ascertaining the effect of varying the quantity of oil upon granulation. Please state as accurately as you can what were

these instructions, so far as they related to the quantity of oil.

A. As far as I remember, the instructions were to start with large quantities of oil, say the upper limit of Cattermole's specified quantity, and reduce this as far as possible. In other words, to find the lowest limit at which any result could be obtained by the use of oil.

Froment Instructions.

(Vol. III, page 1000):

(*Remark*). If the ore contains more than five per cent. of metallic matter such as copper, lead, it will be necessary to add a little more oil. As a general rule, one may assume:

1 % of oil for ore containing up to 5% of metals.
1½% " " " " " " " 10% " "
2 % " " " " " " " 15% " "

It is very rare that one has to enrich ore containing more than 15% copper. In our countries, Italy, France, Spain, ore containing 15% of metallic copper, is considered very rich and is treated as such. In case of lead ore, concentration is continued until the ore contains 60% of lead, this later proportion is seldom exceeded.

Cattermole Oil Proportions Contained in Sulman & Picard Report of March 25, 1903, Addressed to John Ballot.

(Vol. III, pages 1021-1022):

Given these conditions the operation of the Cattermole process has become much simplified compared with the scheme originally put forward. It is sufficient to take the ore suspended in about three to four times its weight of water and to mix this to a uniform pulp in a suitable mixer, preferably of the Gabbett type; to this suspension, while still in a state of agitation, the oil emulsion is added. The proportions requisite may vary somewhat and are shown in the schedule. Roughly speaking, we have found that the oil addition equal to about 7 per cent. upon the mineral present in the ore is sufficient. A small amount of soap solution is also necessary to obtain good flocculation, and it appears to aid in the uniform dissemination of the added oil emulsion through the pulp in the mixer. A very short period of agitation is necessary to effect complete flocculation of the whole of the mineral, which readily subsides, leaving clear water above, opalescent with the soap added. The tendency of our work has been to show that a very small amount of soap is necessary, and we have continually cut this down, almost to the vanishing point; still a small amount of soap during flocculation appears to be advisable.

Sulman & Picard Report of March 25, 1903.

(Page 1025):

Firstly. Suitable crushing of the ore as specified.

Secondly. Flocculating the pulps with a small amount of soap and oil emulsion in the proportions given, using a fair proportion of thick oil to kerosene. (It is only necessary here to note that emulsions containing thick oil are rather more difficult to get completely "smooth," that is, free from unemulsified oil globules, than with kerosene alone; but with a little care and experience a perfect emulsion of thick oil is obtainable.)

Thirdly. Breaking down the flocculent precipitate by strong agitation with very dilute acid.

Fourthly. Gentle rolling to agglomerate the fine mineral particles into shot-like granules.

Fifthly. The separation of granules from gangue in a water up-current.

Sulman & Picard Report of May 5, 1903.

(Page 1027):

Cattermole Process.

We beg to report results of experiments on the above process.

Expt. No. 7. This test was made on Broken Hill ore ground to 60 mesh. 1000 grammes of ore was used in two lots of 500 grammes each, as the Gabbett mixer will not take more than 500 grammes, which portion was agitated with 600 cc of 0.2 per cent. sulphuric acid and 30 cc of soap emulsion. The emulsion was made up of 50 per cent. of oil and 2 per cent. soap; the oil being a mixture of two parts of residuum and one part of paraffine.

This charge was agitated about 10 minutes, half the time with the baffle, and half without. The two charges were then mixed and submitted to the rolling process in the Gabbett (without baffle) for a period of three minutes. This treatment yielded satisfactory granules.

The charge was then put through an up-cast separator to remove the light sands.

Sulman & Picard Report to John Ballot of September 24, 1903. (Re Cattermole Process.)

(Pages 1037-1038):

A certain amount of fine material as well as coarse is necessary to the building up of coherent granules, but the sieve analysis of the 60-mesh material just quoted shows that upon crushing to this maximum mesh quite a sufficient amount of material finer than even 120 is produced for all granulation requirements. The first granulations obtained from a trial on the new plant yielded concentrates containing 20.85 per cent. of insoluble matter, *i. e.*, gangue. Too much oil emulsion had been used in this case and by further reduction (to about 6 per cent.) granulation was found not to be interfered with, and the concentrates only retained 12.15 per cent. of insolubles. A still further reduction was made in the oil additions when it was endeavored to add oil emulsion in the proportion of about 5 per cent. of oil upon the actual mineral present in the ore.

Sulman & Picard Report to John Ballot of March 3, 1905.

(Pages 1099-1100):

We are in full agreement with the rest of Mr. Higgins' observations, and may summarize the work now being done at Aldermanbury Avenue as the determination of the following factors:

(1) Influence of acidity on granulation.
(2) Influence of temperature on granulation.
(3) Influence of speed of Gabbet agitation on granulation.
(4) Influence of ratio of ore to liquor on granulation.
(5) Influence of metallic salts on granulation.
(6) Influence of the size of particles and of the influence of slimes on granulation.
(7) Influence of the amount of oil on granulation.

The above factors are being determined on

(*a*) Oleic acid.
(*b*) Residuum oils.

Higgins Report of March 16, 1905, in which he gives the tabulations regarding the "birth" of the invention of patent 835,120—the Agitation Froth Invention.

(T. R., Vol. III, pages 1108-1109):

FURTHER REPORT ON THE CONDITIONS OF GRANULATION MARCH 16TH, '05. INFLUENCE OF THE PERCENTAGE OF OIL.

The effect of diminishing the percentage of oleic acid is to alter the type of oiling; the higher percentages producing granules, and the lower ones froth. 6 per cent. of oleic acid on the *mineral* is sufficient to form good granules without much froth. This froth consists of insufficiently oiled mineral mixed with large quantities of air. As this percentage of oleic acid is decreased, the time for clean-up of the sands is increased and more froth is formed. 0.62 per cent. oleic acid on the mineral is insufficient to form any granules, and nearly the whole of the mineral comes to the surface, on stopping the cone, as froth. 0.2 per cent. acts in the same manner, leaving the coarse sands with rather more mineral in them. (This is 0.1 per cent. on Broken Hill *Ore.*) In all cases the oil has been measured in cubic centimeters and the percentage calculated as though they weighed grams, but as the specific gravity of the oleic acid is less than unity this is not the case and all percentages will be lower than those actually given.

Details of Experiments.

Acid.	Oleic Acid.	% of Oleic.	Time.	Temp.	Remarks.
1.1%	15 cc.	3 % on ore	4 min.	30.5° C.	Very little float.
"	7½ cc.	1.5 % " "	4¼ "	31° "	Rather more float.
"	5.2 cc.	1.04 % " "	6 "	31° "	Still more float.
"	3.1 cc.	0.62 % " "	6 "	32° "	
"	1.6 cc.	0.32 % " "	7 "	31° "	Float vastly increased.
"	0.5 cc.	0.10 % " "	8 "	31° "	Float vastly increased.
"	0.5 cc.	0.1 % " "	4¾ "	29° "	Not finished.
"	0.4 cc.	0.8 % " "	6½ "	30.5° "	
"	0.5 cc.	0.1 % " "	8 "	31° "	
"	0.5 cc.	0.1 % " "	8 "	31° "	Weight of cones. 170 gms.
"	0.2 cc.	0.04 % " "	8 "	32° "	Apparently not much different.
"	0.1 cc.	0.002% " "	12 "	32° "	Little worse.
"	none	none	7 "	32° "	Very little float.
"	none	none	10 "	32° "	More froth.

Sulman & Picard Report to John Ballot of May 3, 1905.

(T. R., Vol. III, pages 1113-1114):

JOHN BALLOT, ESQ.,
Chairman,
MESSRS. THE MINERALS SEPARATION, LTD.,
62 London Wall, E. C.

Dear Sir:—

We beg to hand you herewith a statement of the new method of oil concentration which we have been engaged in investigating and working out in detail for the purpose of your forwarding to Mr. Courtney and his staff in Australia.

It will be best to start with a short statement on the principle on which the process depends.

In determining the lowest limit of oleic acid which could be employed in granulating, it was found that granulation practically stopped at a range of about 0.5 per cent. of oleic acid on the mineral (60-mesh Broken Hill), in an acid circuit somewhat below 1 per cent. in strength.

A certain amount of black mineral froth was, however, noticed as a result. On successively decreasing the amount of oleic acid *below* .5 per cent. it was found that whereas granulation ceased there was a growth in the amount of mineral float-froth under these conditions, and that the production of such float-froth appeared to reach a maximum when about .1 per cent. of oleic acid on mineral was used. This froth on collection was found to consist of oiled mineral slimes mechanically holding more or less coarse (oiled) mineral particles, the froth carrying between 70 to 80 per cent. of the total mineral present in the charge. The gangue slimes and the coarse sands are left quite white in the liquor below the froth, and the balance of the

coarse mineral not caught up in the black froth, but remaining mixed with the sands, is found to have been efficiently oiled and to be capable of complete recovery from the sands by table aeration.

This important discovery naturally suggested an economical method for the recovery of Broken Hill mineral quite different from any employed by you previously. The froth produced is not due to any action of the acid circuit upon traces of calcite present in the ore, *i. e., not* to the liberation of any gas in the charge by means of the dilute acid employed in the circuit.

(Pages 1118-1119):

We may here conveniently note that other oils besides oleic acid may be employed in this modified recovery process, but so far as Broken Hill is concerned oleic acid gives by far the best results. Petroleum residuum added as emulsion, paraffine oil alone, R_3P_1 and R_1P_3 emulsions, have also been used, and all give small proportions of float, but do not act nearly so vigorously or efficiently on Broken Hill ores as plain oleic acid. Moreover .1 per cent. of oleic acid on the ore treated only amounts to some 6d. per ton, even assuming no recovery of the oleic acid, a question which we shall consider later.

APPENDIX.

Plaintiffs' Contentions Regarding the Invention of the Agitation Froth Patent 835,120, in Hyde Case.

Brief in District Court.

(Page 6):

The process of the patent in suit is an invention which has demonstrated itself, in the test of practical use, to be of world-wide importance to mankind.

(Pages 8, 9):

The process of the patent in suit is ideal, both in simplicity and economy. Taking as a basis the invention as pointed out in claim 1, we find it only necessary to mix or commingle powdered ore with water to form an ore pulp, to add a small proportion of an oily liquid having a preferential affinity for metalliferous matter, this proportion amounting to a fraction of one per-centum of the ore, to agitate the mixture until the oil-coated mineral matter forms a froth, and to separate the froth from the remainder by flotation. This involves the addition to the ore pulp of a small proportion of an oily liquid, such as the well known fatty oil, oleic acid, the proportion recommended in the patent being 0.1 per cent. of the ore (Spec., page 1, l. 99), subjecting the pulp to a brisk agitation which will beat into and out of it great quantities of air, and will effect the dissemination of this minute quantity of oil through the ore pulp so as to produce a coating on the metalliferous particles of infinitesimal thickness, and separating by flotation the mineral froth thus produced from the ore pulp thus robbed of its metalliferous material.

(Page 11):

Claims 9, 10 and 11 are the broadest claims. While clearly limited to the new agitation-froth phenomenon, they are not limited as to oil quantities except that the oil must be "a small quantity." These claims have a

broader scope than has as yet proved to be necessary for the protection of the agitation-froth invention, since no mine owner will use an ounce more of oil than is necessary, and the ores so far tested have not required more than the higher limit of the limited claims, but these claims would cover a wasteful use of oil such as defendant has suggested the possibility of, *and may in the future be necessary to cover an exceptional instance where the production of the agitation-froth phenomenon requires a quantity of oil more than any fraction of one per centum of ore, i. e., one per centum or more of the ore.* It is the duty of the patent attorney to draw broad claims including all possible future uses of the invention, as well as specific claims for what is believed to be the best procedure within the actual knowledge of the inventors at the time of the invention, and this duty has been well performed in this instance.

(Page 12):

The specification of the patent in suit is explained by Dr. Chandler, who considers only that part of the specification which is material to the issues, as above explained.

(Page 13):

Dr. Chandler's explanation is brief and clear, with quotations from the specification (C. R., pages 90-95, Q. 4). The important point as to the discovery is stated to be that the inventors have found that a considerable reduction of oil from that which produces the Cattermole granulation phenomenon, produces another and new phenomenon, the agitation-froth.

(Pages 16-17):

. . . In its first use at Broken Hill, Australia, oleic acid was used in the proportion of 2 lbs. to the long ton of ore (Chapman, C. R., page 176, Q. 25). Later re-

finements reduced this oil consumption to 1½ lbs. of oleic acid per long ton (Chapman, C. R., page 198, Q. 92), and it has been found that eucalyptus oil can be used on Broken Hill ore in the proportion of ½ lb. to the long ton (Higgins, D. R., page 394, Q. 117). In Finland the oil used was a mixture of oleic acid at from ½ lb. to 2 lb. per long ton, and eucalyptus oil at 2 lbs. per long ton (Chapman, C. R., page 200, Q. 102). In Sweden, wood tar oil is used in the proportion of 4 lbs. per long ton (Chapman, C. R., page 200, Q. 104), and in Chile a mixture is used of Texas fuel oil at 3 lbs. per long ton and American wood tar oil at 1 lb. per long ton. The variations in acid consumption are still greater. These are only examples, to which might be added defendant's use of the process, which at the time that he was detected was 3.2 lbs. of oleic acid per short ton of ore, or .16 per cent., as will appear from the testimony as to infringement to be hereinafter referred to.

(Pages 18-19):

A reference to the tests made at the time of the discovery of the invention, as brought out by the defendant, will show that in the careful investigations made at that time it was found that this proportion, 0.1 per cent., gave best results, although slight variations up and down from this proportion were not altogether useless. This report was made on March 16, 1905, a few days after the discovery, and was produced during the testimony of Mr. Sulman, one of the three joint inventors, as a witness for the defendant. All of the circumstances connected with the discovery of the invention will be referred to later in this brief under the heading, History of Agitation-Froth Invention, but a reference at this point to the report of A. Howard Hig-

gins, the metallurgist who performed the first experiments under the directions and instructions of the inventors, will be instructive (C. R., page 822). Here will be seen particulars of tests with oleic acid in the proportion of 0.32 per cent. of the ore, "float vastly increased"; 0.1 per cent., float again "vastly increased"; .04 per cent., "float apparently not much different"; and .02 per cent. (1 cc of oleic acid to 500 grams of ore), erroneously written as 0.002 per cent., "float little worse." Again (C. R., page 821), it is said that 0.62 per cent. of oleic acid on the mineral (0.31 per cent. on the ore) is insufficient to form any granules and gives a froth, and that 0.2 per cent. on the mineral (0.1 per cent. on the ore) gives more mineral in the froth. Again (C. R., page 823) an assay return is given of a test with 0.1 per cent. oleic acid, giving a concentration of lead 92 per cent. and zinc 94 per cent. With these results before them, the inventors suggested in their specification the limits of "0.02 per cent. to 0.5 per cent. on the weight of the ore" (Spec., page 1, lines 81, 82), and recommended 0.1 per cent. as "suitable and economical" (Spec., page 1, lines 99-101). Subsequent applications of the process to the treatment of millions of tons of ore has demonstrated that these careful tests, made at the time of the discovery, ascertained the characteristics of the agitation-froth phenomenon and determined the conditions of its economical production —the use of the process for the benefit and profit of mankind—and these characteristics and conditions have been true of every one of its numerous and extensive uses.

(Page 20):

This is the agitation-froth, the new phenomenon discovered by the inventors, a remarkable and wholly unexpected phenomenon. This phenomenon is described

by Dr. Adolf Liebmann, a chemist and physicist of international reputation, as follows:

> "It is a froth consisting of air bubbles, which in their covering film have the mineral embedded in such manner that they form a complete surface all over the air bubbles. The remarkable fact with regard to this froth is that, although the very light and easily destructible air bubbles are covered with a heavy mineral, yet the froth is stable and utterly different as far as this property is concerned from any froth known to me. It appears as if the minerals were protecting the tender air bubble like an armor, and, instead of destroying it, were actually guarding it. The froth has a long life. One feels tempted to say it is permanent, at least as far as metallurgical operations are concerned." (C. R., page 378, fol. 1133.)

(Page 21):

Dr. Charles F. Chandler, who has probably educated more mining engineers than any other man, and has been called upon to testify in the principal metallurgical controversies for the past forty years, thus describes this new phenomenon:

> "The remarkable thing about the froth produced in this process is its permanency. The bubbles of air, with water films, are thickly coated with mineral particles and appear to be armored by these metallic particles. The froth piles up thickly and carries the great weight of the mineral particles, which are the heaviest particles of the ore. The oil has entirely disappeared from sight and sense. It cannot be seen and it cannot be felt, and the particles of mineral are just as bright as though there was no oil upon them at all." (C. R., page 666, fol. 1996.)

(Pages 24-25):

Next, commencing at page 2, line 13, is the statement of the possibility that the fatty acid which forms the microscopic coating on the "metalliferous matter which

produces the froth'' may give rise to insoluble soaps, if soluble lime, iron or other salts are present in small quantity during the production of the froth or on the breaking down of the froth with alkali, and that if this happens it will not be of disadvantage to flotation. This relates to oil recovery by alkali, which changes the oil or fatty acid to a soap, and to possible results of such procedure when the liquor is used again in closed circuit, and is, as above stated, the subject of claims 8 and 13, which are not in issue.

(Pages 32-33):

. . . The second of these patents, No. 793,808, is known as the bubbles patent, and represents the first and unsuccessful efforts of Sulman and Picard to utilize flotation in oil concentration with a smaller quantity of oil than was required in the Elmore bulk oil buoyancy flotation process. The application for this patent was filed October 5, 1903, during the early struggles of Messrs. Sulman, Picard and Ballot to discover or devise a satisfactory process of ore concentration by oil. The quantity of oil to be used is stated to be

> ''insufficient to raise the oiled mineral by virtue of the flotation power of the oil alone.'' (Spec. 793,808, page 1, lines 26, 27.)

that is to say, it is something less than 6,000 pounds to the ton of ore; and it is also stated to be such that the solid particles are

> ''moistened by oil.'' (Spec., 793,808, page 1, line 19.)

To moisten the particles requires at least the Cattermole quantities, which were the smallest quantities known to be usable in 1903. It is a characteristic of the agitation-froth process that the minute quantity of oil used disappears from sight and sense.

(Page 61):

Thus it will be seen that the Cattermole granulation plant installed at Broken Hill, Australia, was a reproduction on a large scale of the experimental plant shown in the "Photograph of Australian Model Plant," . . . Mr. Chapman testifies:

> "We started the plant on dump tailings and treatment proceeded on Cattermole lines for but a few days. The oil consumption alarmed our clients and I was instructed to use every endeavor to bring this down." (C. R., page 174, Q. 22.)

This oil consumption, with dump tailings, which run about 30 per centum mineral (Chandler, C. R., page 644, fol. 1932) with the standard determined for this plant,

> "five per cent. on the sulphide mineral constituents or mineral content of the ore" (Chapman, C. R., page 171, Q. 9)

would amount to about 1½ per cent. on the ore, or 33.6 pounds per long ton and 30 pounds per short ton of ore. This was the oil consumption which alarmed the mine owners, the Sulphide Corporation, and which Mr. Chapman then used every effort to reduce.

(Page 62):

. . . The best that he could do was to place all his reliance on the table flotation annex to the Cattermole apparatus and to reduce the oil consumption to .8 per cent. of the ore, 17.92 pounds per long ton and 16 pounds per short ton of ore. Under these conditions good granulation was impossible, mineral flocks were formed and these were floated by air exposure on the table and surface tension flotation. Mr. Chapman says:

> "The formation of good shotty granules was impossible under these conditions, mineral flocks

> being formed, and these readily separated on the skin flotation table on the lines in which I had been instructed by Messrs. Sulman, Picard and Ballot previous to my departure for Australia. These trials took considerable time, and it was a few weeks before this best condition was reached. The plant proceeded to run on these lines." (C. R., page 174, fol. 522.)

Here we have the closest approach in oil consumption which was ever made to that of the agitation-froth process, actually made, in fact, after the discovery of that process, since that invention was made in early March, 1905, in England while this determined effort to reduce the oil consumption to a minimum by a metallurgist skilled in the whole prior art, was made in Australia in April or May, 1905.

(Pages 63-64):

. . . Further, when the agitation-froth discovery was communicated to him through the course of the mails, fully four weeks from London to Broken Hill, Australia, he welcomed it as a discovery of great value (C. R., page 175, fol. 523) and immediately changed over his plant, the plant which represented so much care and thought and effort, so as to carry out in it the agitation-froth process (C. R., page 175, Q. 24), and produced thereby the agitation-froth, which he says

> "was entirely different to any float that I had seen in the other processes in which flotation had been attempted" (C. R., page 175, fol. 525),

and reduced the oil consumption to two pounds of oleic acid per long ton of ore (Chapman, C. R., page 176, Q. 25), 0.089 per cent. on the ore, 1¾ pounds per short ton of ore. Thus, under Cattermole, he started with an oil consumption, per long ton of ore, of 33.6 pounds; by spoiling Cattermole, and recovering by table flotation, he reduced this to 17.92 pounds, and by in-

troducing the agitation-froth process in accordance with the directions of Messrs. Sulman, Picard and Ballot, he brought this down to 2 pounds. The work then started still continues and millions of tons of ore have been treated. The oil consumption was soon reduced to 1½ pounds per long ton (Chapman, C. R., pages 197, 198, Q. 92).

(Pages 65-66):

HISTORY OF THE AGITATION-FROTH INVENTION.—DISCOVERY.

In the next Sulman and Picard report, of March 3, 1905, we find a summary of the work then being done at the Aldermanbury avenue laboratory as the determination of the influence of seven factors on granulation, with the employment, first, of oleic acid, and, second, of residuum oils. The seventh of these factors is:

> "Influence of the amount of oil on granulation" (C. R., page 815).

It was the investigation of this particular factor as a part of the scheme of investigation, which brought about the discovery of the agitation-froth process.

(Page 66):

. . . Defendant therefore probed deeply into the facts as to this investigation and has proved that these seven instructions were arrived at in a conference of the three inventors, Messrs. Sulman, Picard and Ballot; that they were written out by Mr. Sulman and handed by him to Mr. Higgins in the presence of Mr. Ballot; that they were supplemented, as to the seventh factor, by oral instructions to reduce the quantity of oil step by step so as to find, as Mr. Higgins says, "the lowest limit at which any result could be obtained by the use

of oil'' (D. R., page 399, X-Q. 139), and that the work of Mr. Higgins, under the supervision and direction of the inventors, in thus reducing the oil step by step, resulted in the discovery of the agitation-froth process.

(Pages 68-69):

th C. C. A. ppeal Brief, age 30

And, finally, Mr. Higgins, the metallurgist who carried out these instructions, fully corroborates this testimony, testifying as follows:

> "X-Q. 139. In Q. 66 you were asked as to the nature of instructions received by you, and in your answer to Q. 67 you speak of the reduction of oil being carried down to a very small proportion, and in Q. 137 this work, I take it, was referred to as experiments for ascertaining the effect of varying the quantity of oil upon granulation. Please state as accurately as you can what were these instructions, so far as they related to the quantity of oil.
>
> "A. As far as I remember, the instructions were to start with large quantities of oil, say the upper limit of Cattermole's specified quantity, and reduce this as far as possible. In other words, to find the lowest limit at which any result could be obtained by the use of oil." (D. R., pages 398, 399.)

(Pages 85-86):

h C. C. A. ppeal Brief, age 110

There is one almost unbelievable characteristic of the concentrate produced that was not appreciated when this report was written. It was believed necessary to clean off the "infinitesimal amount of oil" to render "the concentrates fit for vanning separation into blende and galena" (C. R., page 833, fol. 2498). This had always been necessary in prior work. The oiling of the mineral moistened it and made it sticky. This cleaning has, however, never been necessary in the working of the agitation-froth process. The infinitesimal oil coating has here no adhesive effect whatsoever, and the concentrates may be freely tabled or vanned.

(Page 86):

The installation of the agitation-froth process at Australia was quickly effected. Six large scale Gabbetts, in series, were already installed (Chapman, C. R., p. 173, Q. 19), and at work in a hybrid process of oiling by agitation in less than Cattermole proportions, .8 per cent. on the ore, separation from fine sands or gangue by sinking the mineral in an upcast, which carried upward and to waste the fine sands, gentle agitation in a second series of Gabbetts, without baffles, then separation of the mineral from the coarse gangue by skin flotation on tables in accordance with the table flotation patent No. 879,985 (C. R., page 174, Qs. 20-22).

(Page 132):

As to the fact that the production of the agitation-froth is in itself an indication of the use of the agitation-froth process, Mr. Sulman, testifying as a witness for defendant, says:

> "The phenomenon of the agitation-froth production is in itself an indication of the right amount of oil to employ" (D. R., page 264, Q. 119),

and he further states that an operator may be entirely governed by the result to be obtained, to-wit, the production of the agitation-froth (D. R., page 266, Q. 123).

(Pages 133-134):

As to the effect of slightly increasing the oil supply above the proper amount for the production of the agitation-froth and of slightly diminishing the oil supply below such proper amount, we have the testimony of Mr. Chapman, who installed the agitation-froth process in Australia, Finland, Sweden and South Wales, as follows:

"110 Q. What has been your experience when

in using the agitation-froth process on a commercial scale, with a normal and proper consumption of one and a half pounds of oil per ton of ore, this procedure has been varied by increasing the oil feed to two and a half pounds per tone of ore?

"A. The mineral froth being produced on the spitz boxes loses at once some of its natural color and lustre and becomes dull in appearance. The quantity of froth being recovered on No. 1 box is considerably lessened. The froth on No. 2 spitz is slightly increased and the same with No. 3 box. The tailings on examination immediately show increased losses of sulphide mineral. These losses take the form of well oiled agglomerations.

"111 Q. And what has been your experience when the normal and proper feed of one and a half pounds of oil per ton of ore has been diminished to half a pound of oil per ton of ore?

"A. The froth being recovered immediately diminishes in quantity and the color shows the presence of slime gangue. The supporting liquor of the spitz box immediately changes in appearance and shows the natural color of the ore slimes. The tailings become very dirty and show no sign of what we know as a good 'clean-up.' In fact the whole treatment suffers and unless the oil feed is restored to its normal condition a serious drop in recovery takes place with the production of a lower grade concentrate." (C. R., page 201.)

(Page 135):

9th C. C. A. Appeal Brief, Page 163.

And this testimony is absolutely unaffected by the fact, apparently discovered by defendant's expert, that if enormously extravagant and wasteful quantities of certain oils are used with defendant's ore, sixty-six times so much as is necessary, it is possible to so manage tests in a slide machine as to obtain a fair recovery of floating concentrate. These tests are described by Dr. Byrnes (D. R., pages 165, 166). He first used .3 cc. of cotton-seed oil and produces an agitation froth with good recovery. Then under the same conditions he uses 20 cc., or "66 times as much," of the same oil,

and, starting with 99.9 grams of zinc in his ore, obtained 101.9 grams of zinc in his concentrate and 2.9 grams zinc in his tailings, a total of 104.8 grams of zinc (Liebmann, C. R., page 478, fol. 1434), a truly remarkable result, since these tests always show a slight loss of zinc in the apparatus. He then used the same wasteful quantity of olive oil, and obtained a reasonable and very good recovery. He then used the same wasteful amount of oleic acid and failed. He then used half the amount of a modified oleic acid, still thirty-three times the amount which had given a good result in cotton seed oil, and obtained a good recovery. These tests prove nothing of any value. Mining companies are not inclined to unnecessarily mulitply the cost of an important item of expense by thirty-three or sixty-six.

(Pages 135-136):

It may be noted that these tests of Dr. Byrnes were untruthfully alleged by him to be tests of the Froment process of the prior art, but that will be considered under the heading, "Froment."

To further probe into this remarkable result of wasting oil, Mr. Higgins made a test at Butte (C. R., page 680, Q. 31) in a very small continuous testing plant, of Elm Orlu ore, from a mine adjacent the Black Rock mine, producing defendant's ore. He used the same proportion of cotton seed oil as Dr. Byrnes had used, sixty-six times as much as was necessary, 3.6 per cent., and obtained a copious oily float, which at a distance looked like the agitation-froth. This float was dense and occasionally fell down in masses. The tailings contained granules. The recovery was only 50 per cent. of the zinc. Thus the recovery obtainable by careful management of a slide machine was not duplicatable nor was any practical recovery obtainable in a continuous apparatus.

9th C. C. A. Appeal Brief, Page 164

(Page 137):

These tests make it quite clear that when Dr. Byrnes' oil-wasting tests are repeated in continuous plants such as defendant is operating, the results are out of all reason, and that the larger the plant, the worse the result.

IN THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE NINTH CIRCUIT.

James M. Hyde,
Appellant,
vs.
Minerals Separation, Limited, and Minerals Separation, American Syndicate, Limited,
Appellees.
No. 2346.

Brief for Appellees.

(Pages 9-10):

ORE CONCENTRATION BY OIL.

The patent in suit is for a new process of ore concentration wherein the preference of oil for metallic particles is utilized. The invention is the culmination of efforts to solve the problem of the economical concentration of those ores in which the valuable metals are present in a metallic condition, as in the abundant sulphide ores of zinc, copper and lead, by utilization of the old and well known preference of oil for metallic substances.

(Pages 11-12):

The Cattermole process was a remarkable step forward in diminution of the amount of oil required, reducing this amount to from 4 to 6 per centum of the weight of metalliferous mineral in the ore. The Cattermole process was adapted only for comparatively rich ores. The ore used was Broken Hill ore, of say 50 per cent. mineral or sulphide content. For this ore Cattermole required from 40 to 60 lbs. of oil to the ton of ore. For the same ore, the Elmore process required, roughly, 6,000 lbs. of oil to the ton of ore. The process of the patent in suit, which for the first time

brought this oil consumption to practical proportions, requires 0.1 per cent. of the ore, regardless of the mineral content, the oil being only one one-thousandth part of the ore (2 lbs. of oil to the ton of ore). This minute quantity of oil produces the remarkable new phenomenon known as the agitation-froth. This phenomenon and the economical and practical method of its production were discovered by Messrs. Sulman, Picard and Ballot in March, 1905, after long and arduous efforts to develop the Cattermole process into an economical and workable process of ore concentration.

(Pages 14-15):

The process of the patent in suit is ideal, both in simplicity and economy. Taking as a basis the invention as pointed out in claim 1, we find it only necessary to mix or commingle powdered ore with water to form an ore pulp, to add a small proportion of an oily liquid having a preferential affinity for metalliferous matter, this proportion amounting to a fraction of one per centum of the ore, to agitate the mixture until the oil-coated mineral matter forms a froth, and to separate the froth from the remainder by flotation. This involves the addition to the ore pulp of a small proportion of an oily liquid, such as the well known fatty oil, oleic acid, the fraction of one per cent. recommended in the patent being 0.1 per cent., one-tenth of 1 per cent., of the ore.

(Page 24):

. . . It is a characteristic of all processes dealing with ores that each ore presents a slightly different problem, and as the process of the patent in suit has been put at work in different parts of the world, the conditions of its use have slightly varied. In its first use at Broken Hill, Australia, oleic acid was used in

the proportion of 2 lbs. to the long ton of ore (Chapman, R., p. 376). Later refinements reduced this oil consumption to 1½ lbs. of oleic acid per long ton (Chapman, R., p. 391), and it has been found that eucalyptus oil can be used on Broken Hill ore in the proportion of ½ lb. to the long ton (Higgins, D. R., p. 361, Q. 117).

(Pages 126-127):

The next mine installation was at the Braden Mines, in Chile. Here a copper ore containing 3 per cent. of copper is treated by the agitation-froth process. A plant with a capacity of 250 tons per day has been installed, and a plant of 1200 tons per day is in course of erection. With acid at 5 to 6 pounds per ton of ore, Texas fuel oil at 3 pounds per ton of ore, and American wood tar oil at one pound per ton, and no heating, recoveries are at eighty-five to ninety per centum (R., pp. 394, 395).

ARGUMENT BY JOHN H. MILLER ON BEHALF OF APPELLEES.

(Page 4):

The invention in suit is a radical departure from any of the above suggested methods and from any known method in the art. It is exceedingly simple. Indeed, its simplicity is its dominant feature. It may accordingly be described in a few words.

The ore is finely pulverized and mixed with water to form a freely flowing pulp. To this is added a minute quantity of oil varying from two one-hundredths of one per cent. (.02%) to one-half of one per cent. (.5%) on the weight of the ore according to the character of the oil used. The preferable percentage is one-tenth of one per cent., *i. e.*, two pounds per ton of ore. This mixture, consisting of a large quantity of

freely flowing pulp and an infinitesimal quantity of oil, *is then violently agitated in a mixing vessel,* from two and a half to ten minutes. *When the agitation is stopped,* the gangue matter sinks to the bottom of the vessel and the metalliferous matter rises to and floats on the surface of the water in the form of a thick coherent permanent froth or scum.

(Page 11):

. . . According to the patent a minute quantity of oil, preferably one-tenth of one per cent. in amount on the ore (*i. e.,* two pounds to the ton) is mixed with a very large quantity of water and powdered sulphide ore and the mass is then violently agitated. The result of this violent agitation is to break up the oil into minute and almost infinitesimal particles and to whip into the liquid mass large quantities of air whereby myriads of air bubbles are generated while the sulphide particles and gangue particles are held in suspension.

(Pages 26-27):

In the process of the patent in suit the specific gravity of the oil cuts no figure whatever. The quantity of oil used in covering the metallic particles is so infinitesimal that it becomes a negligible quantity as affecting the specific gravity of the particles. In other words, the oil-coated particles are practically and for all intents and purposes of substantially the same specific gravity as the particles themselves. The basis of the process is the utilization of the doctrine of surface tension and the carrying power of air bubbles.

(Pages 54-55-56):

It is also argued by the learned counsel for appellant that the patent is void because it fails to specify the exact amount of oil necessary and merely gives a

range, leaving to the user the task of ascertaining the exact amount within the range by experiment. . . .

But the case of *U. S. Mitis Co.* v. *Midvale Steel Co.*, 135 Fed., 105, seems to be *conclusive.* The invention there involved was a process for making steel castings homogeneous so as to prevent blow-holes, and it consisted simply in adding to the molten steel when it is about to be poured into the mold a minute quantity of metallic aluminum. In that behalf the specification said:

> "I have found that the use of a minute quantity, never exceeding one per cent. by weight—preferably from one-fifth to one-tenth of one per cent. by weight—of metallic aluminum added to the molten iron has the desired influence, and even a very much smaller percentage has an appreciable influence."

Here, then, we have a strictly analogous case. The directions were to use not over one per cent. and preferably from one-fifth to one-tenth of one per cent. of aluminum. The directions of the patent in suit are to use less than one per cent. of oil, from two-hundredths to five-tenths of one per cent., and preferably one-tenth of one per cent.

(Page 69):

. . . We have already pointed out the fact, and sustained it by citation of authorities, that in the case of patents relating to chemical and physical forces but little reliance can be placed on analogies drawn from mechanical patents. The reason for this is that a very small change in detail or proportions may produce a radically new result in the case of chemical and physical patents, whereas in the case of mechanical patents a change in degree and proportion will not often produce a result different in kind.

(Pages 74-75):

The invention in suit fulfills the above requirements. These patentees have certainly added something of value to the sum of human knowledge, they have made the world's work easier, cheaper and safer, and most assuredly a return to the prior art would be retrogression. Millions of dollars' worth of tailings have been successfully worked by this process, which prior thereto were unworkable by any known process. Millions of dollars of profit have accrued to the owners of the patent. The process has been put into use in many places throughout the world, and always with success. It has displaced other processes. Indeed, the only other processes ever used in practice were Elmore and Cattermole. They are now discontinued, and the process of the patent in suit has been substituted therefor. The result produced by this process is radically new. The agitation-froth is a new phenomenon in the metallurgy of ores. The eminent chemists produced by us have so testified. The cost of practicing the process is inconceivably small; ten cents' worth of oil to the ton is all that is necessary in the shape of chemicals. The other substance used is the natural atmosphere of the world itself, an inexhaustible store-house upon which we can call at will and without cost. Mix a ton of ore pulp with ten cents' worth of oil and vigorously agitate the mixture. That is the process, so far as claim 1 is concerned. Nothing can be simpler, nothing can be cheaper, and the result thus produced is so wonderful and marvelous that it may be denominated as spectacular.

Printed Oral Arguments on Appeal, Ninth Circuit Court of Appeals.

MR. WILLIAMS (page 52):

Now, this Cattermole process was a beautiful process, a reliable process, the first process which utilized slimes. Elmore had to reject them, all the valuable slimes, as much mineral as gangue. You could not grind ore without getting slimes, and with a brittle ore, such as blende, you get a large quantity of them. Cattermole was the first man who could treat slimes. It was a very important point. This Cattermole process we worked on for two years and three months. We exhaustively investigated it and improved it. We erected a plant. The plant was not finished until after the present invention was made. The oil consumption, even by Cattermole, proved to be too large. But it is a very interesting process, a very practical process, subject only to the objection that it uses too much oil. I am going to show to the court the Cattermole process as it was carried on in our laboratory and as it was installed in Australia in a plant of large dimensions.

(Pages 55-56):

The patent recognized as a suitable and economical fraction of 1 per cent., one-tenth of 1 per cent., one one-thousandth of the ore, two pounds of oil to the ton of ore; and the practical application of the process in the treatment of millions of tons of ore has mainly been at that recommended proportion. The greatest amount of oil that has ever been necessary has been four pounds of oil to the long ton of ore; the smallest amount that has ever been used has been a trifle under one pound; the smallest amount that is usable is with an oil which is rather an expensive oil—eucalyptus oil—one-half a pound of oil to the ton of ore.

Now, what happens to this trace of oil which coats the mineral? It disappears from sight and sense. You take your concentrates and you cannot see any oil on them with a microscope of ordinary character; you cannot see any oil on them, you cannot feel that they are oily; you can take them and subject them to gravity treatment, shake them on tables, and you will find that the oil has absolutely disappeared. It is sensible only to chemical treatment. The metalliferous mineral is so thinly coated, the coating is so microscopic, it is not a molecule thick, yet you have all the affinities in the operation of the metal with the co-operation of the oil, and you produce a froth, which is composed of water films, no oil in the water at all, water films with these oily coated particles all about the bubble, making a complete armor for the bubble, and produces that permanency which characterizes the agitation froth.

(Pages 59-60):

Now we come to another group of claims, 9, 10 and 11. These are the claims that were referred to by appellant's counsel as being very broad.

The defendant has infringed these broad claims, and he has also infringed the specific claims. The defendant has used 3.2 pounds of oil to the ton of ore, 0.16 per cent. That is decimal 16 per cent. The specification here of the quantity of oil is a small quantity of oil. It may be possible that in the future somebody will use more than a fraction of 1 per cent. of oil and get the new result which was never obtained before we got it.

(Page 65):

All those things were valuable when we were dealing with appreciable quantities of oil; but in the process in the patent in suit the amount is so slight that it does

not pay to use any other material to get it back, 2 pounds to the ton of ore, 10 cents to the ton at the greatest, and lost to the sight and the senses. Only will it be necessary to remove that in the future if we put the concentrate through a chemical process. If we did that the trace of oil in the mineral would manifest itself. If we had a cyanide it might be necessary to clean off that little microscopic film of oil.

> "We have found that if the proportion of oily substance be considerably reduced—say to a fraction of one per cent. on the ore—granulation ceases to take place, and after vigorous agitation there is a tendency for a part of the oil-coated metalliferous matter to rise to the surface of the pulp in the form of a froth or scum. This tendency is dependent on a number of factors."

(Page 68):

That is undoubtedly true. The remarkable fact is, it does not vary in proportion to the richness of the ore. Down in the Braden mine, in Chile, we used 4 pounds of oil to the ton of ore, and the ore contains 3 per cent. of copper. Out in Australia, in the Broken Hill area, 50 per cent. of ore in mineral content, we used there slightly less than a pound. Our phenomenon is distinguished, differentiated, from everything else by the fact that it does not make any difference how rich the mineral is; in practice, in the treatment of thousands of tons daily, we use 4 pounds for a 3 per cent., or maybe a 6 per cent., mineral content, and we use less than a pound for an ore containing from 50 to 55 per cent. mineral content. But these variations are not very great, and they are all within the specific limitations of the patent in suit.

(Pages 80-81):

. . . The Cattermole patent does not mention heat. But it was discovered in the laboratory work that heat helped along the Cattermole process; it diminished the period of oiling. Then it was discovered, it was slowly worked out, it had been worked out in the Cattermole, that sliming was an advantage. The elements which were assembled together by this long period of research were a violent agitation, such as was obtainable in the Gabbett or cone-mixer, oleic acid, heat, fine crushing without de-sliming, and then one other factor, the reduction of oil.

(Page 82):

There was then asked specifically what the instructions were as to the reduction of oil. It may be remarked here that the instructions on the line of those that I read, the seven factors, were made out in writing. The three inventors got together and they made out a list of the topics and this was handed to Mr. Higgins by Mr. Sulman in the presence of Mr. Ballot.

> "The instructions which I received from Messrs. Sulman, Picard and Ballot, pursuant to which I carried out the experiments described in my report of March 16, 1905, were, so far as they related to the quantity of oil, to start with large quantities of oil, say the upper limit of Cattermole's specified quantity, and reduce this as far as possible. In other words, to find the lowest limit at which results could be obtained by the use of oil."

Mr. Miller (page 98):

The agitation froth, which is produced by this patent, and an example of which is found in that jar over in the window, there, is a froth of pure sulphide metals, uncontaminated with oil or anything else. All you have to do is to gather that froth from these vessels, dry it

out, and take it to the smelter, and when it is taken to the smelter, then the operation of separating the pure metal from the sulphur is carried on in the smelter furnaces. That is all that has to be done.

Now, it is a known fact that no smelting furnace will receive for treatment an ore of any kind that has any oil in it, because oil is detrimental to the furnace treatment, and they will require you to separate the oil from it before they will treat it, and in order to find that out, they test every ore that is brought there.

(Pages 98-99):

. . . Now, the secret of that, if your Honors please, is simply this, that so small a quantity of oil has been used that when it comes up into the fermented froth, it is lost to sense and to sight; you cannot detect any oil in that froth, except by a minute chemical analysis, and then you find only a trace of oil; what the chemists say a trace; it is a negligible quantity. That is what all the witnesses have testified to on our side of the case, that the peculiarity about this froth is that it is a pure metallic froth, uncontaminated by oil or anything else, and requiring only to be dumped into a furnace in order to be recovered. Nothing of that kind has ever been done before.

(Page 99):

By some chemical laboratory manipulation, the learned counsel have produced in these four jars over here a froth. It is not the froth of the patent, because the froths which they have produced over there are froths that are contaminated by oil, and froth which would have to be separated before they could be operated upon by a smelter. It is not the froth of the patent that we have in those jars over there. There is a general outward appearance of similitude when

first produced between these froths and the froths produced by us, but is only the similitude of a corpse to a living being; the outward delineation or form is there, but the life is gone and is not there. The two things are not the same, although they have some outward resemblance. These things that they produce there were never produced in practice, but are merely laboratory experiments, which they have produced for the purpose of their argument. They do not pretend or claim that they were ever used or that they had any useful purpose whatever; but they only claim that they can produce our froth by using excessive quantities of oil. We say in answer to that, you do not produce our froth by the excessive quantities of oil. You produce a froth which is not our froth, in that it is a froth, and that is admitted, made with large quantities of oil, and, therefore, is useful for the purpose for which our froth is used.

(Page 100):

. . . The one point I make is that the product, the result produced by our process, is absolutely novel in the art. I say that is proved by the testimony of witnesses, and is proved by an examination and test of these various froths themselves, ours being *a pure metal froth, and theirs being an oil froth,* one, ours, being of great utility, as evidenced by a substantial use, theirs being absolutely of no utility whatever, as evidenced by the fact that it has never been used, and never will be used, as long as ours is used.

Brief of Petitioners-Complainants in Supreme Court—Hyde Case, Re Petition for Writ of Certiorari.

(Page 2):

The process of the patent in suit is known as the agitation-froth process. Essentially it consists in the violent agitation of a pulp of finely ground ore and water with a minute quantity of oil, resulting in the production of a mineral froth which floats upon the surface of the liquid, carrying with it the valuable metal contained in the ore, while the gangue or rock particles remain in the liquid. A small quantity of acid or moderate heat or both are sometimes additionally employed.

(Pages 7-8):

In contrast in the Privy Council judgment it is said of the respondents' process there (the process of the patent in suit here):

> "The real difficulty which their Lordships have to determine is whether the Respondents in the process of separation which they employ, entrap or coat and hold or carry the metallic particles in oil, using oil as the selective agent. The Respondents deny that they in any way use the Appellants' invention, and say that their process is essentially distinct, and that its successful operation depends on the law of surface tension. It is not incumbent on the Respondents to explain the law on which the success of their process depends." (Rec., p. 1358.)
>
>
>
> "Apart from any question of theory, the Respondents use oil in their process under conditions which make it almost impossible to entrap or coat and hold the metallic particles by the selective agency of oil. The respondents use a thin oil at a temperature of 120° Fahr., the quantity is minute, not more than 2 or 3 pounds to a ton of ore, or

> about 2 or 3 pints of oil to 10,000 pints of water; the resulting concentrate is practically free from oil and no mechanical contrivance to separate the oil from the metallic particles is required or used; the residue of the first concentration is further treated without any further addition of oil . . . their Lordships accept the evidence of Professor Pollock (defendant's expert) . . . summarized as follows: Professor Pollock is referred to his earlier evidence, and states that he does not think that the small quantity of oil introduced in the defendants' process necessarily performs any other function than permanency in the froth and extremely minute emulsion. He allows that there may be oil in excess, and that some of the particles may get oiled, but states that this is entirely and absolutely unessential. He does not however think that more than the necessary quantity of oil is introduced to effect concentration, but that having regard to the nature of the problem it is a matter of conjecture and exact calculation is not possible. Finally he reiterates his opinion that the defendants' process can be accounted for without assuming selection of the metallic particles by oil." (Rec., pp. 1359, 1360.)

In the House of Lords' judgment, the Earl of Halsbury, considering the Elmore patent there in suit and the prior Everson patent, hereinafter referred to, and contrasting them with the defendant's process (the process of the patent in suit here) said:

> "My Lords, I am of opinion that the two inventions are essentially different. I mean by the two inventions those which might be technically described, the one upon the selective action of oil, the other upon surface tension. That the two processes are in these respects totally different cannot be denied, and the acidulation which is supposed to incriminate the latter process with infringement is common to the first process and to another (Everson) which was invented and patented before it" (*infra,* p. 46).

In other words, the agitation froth process depends

upon the surface tension, the physical law controlling the production of the agitation froth, and the Everson and Elmore patents depend upon the selective action of oil.

(Pages 9-11):

Lord Shaw then gives consideration to the defendants' process as described in the British patent corresponding to the patent in suit here, and then as to the question of infringement by that process of the Elmore patent, says:

> "nor do I see my way to hold that there has been any contravention of the 1901 (Elmore) patent by the application of the acid to a mixture in which the oil has been reduced from bulk to the merest fraction, and especially when froth instead of oil has been secured, along with the law of capillarity or surface tension, as the main floating and separating agent" (*infra,* p. 60).

Again, in the House of Lords decision, Lord Atkinson says of the process of the defendant there (the process of the patent in suit here):

> "in their process this mysterious affinity of oil for the metallic particles of the ore is availed of, yet the oil is used in such relatively infinitesimal quantities, that the metallic particles are only coated with a thin film of it, and the lifting force is found, not in the natural buoyancy of the mass of added oil, but in the buoyancy of air bubbles which, introduced into the mixture by the more or less violent agitation of it, envelope or become attached to the thinly oiled metallic particles, and raise them to the surface, where they are maintained by what is styled the surface tension of the water" (*infra,* p. 51).

The House of Lords had before it the British patent corresponding to the patent in suit and evidence of the use of the process described therein. The Privy Council had before it evidence of the very extensive use of

that process in Australia. Their views as to the essential characteristics of that process were reached after the most careful and exhaustive consideration, and, as will be seen, their conclusions are irreconcilable with the opinion of the Circuit Court of Appeals of the Ninth Circuit as to the same process.

As to the prior art, there is a marked divergence of opinion between the three judges of the Circuit Court of Appeals of the Ninth Circuit on the one hand, and the ten Law Lords of England who participated in the two judgments above referred to, on the other hand. The Circuit Court of Appeals, after reviewing the patents of the prior art, including the Haynes British patent No. 488 of 1860, and the Everson United States patent No. 348,157, of 1886 (Rec., p. 1277), held:

> "The froths are all similar in appearance, they all rise to the surface after the same amount of agitation, they all gather with equal efficiency the same quantity of metal, and all may be removed from the surface in the same way" (Rec., p. 1285).

In the House of Lords judgment this Everson patent is repeatedly referred to (the Lord Chancellor, Lord Loreburn, *infra,* p. 45; Lord Atkinson, *infra,* p. 51; Lord Shaw, *infra,* p. 61; and by the Earl of Halsbury, in the quotation above given and the reference to the dilemma put by Mr. Justice Neville, *infra,* p. 48, see Justice Neville's judgment, High Court of Justice, 25 R. P. C., 741, 756), yet Lord Shaw says that the process of the defendant there (of the patent in suit here) is "a new method of separation" (*infra,* p. 59), and then repeatedly quotes, from the Sulman, Picard and Ballot British patent corresponding to the patent in suit here, language exactly repeated in the patent in suit here, evidencing the fact that the production of a mineral froth by agitation is the dominant characteristic of this process and was new.

(Pages 15-16):

We have above set forth particulars wherein the decision of the Circuit Court of Appeals of the Ninth Circuit and the judgments of the British courts are in conflict. In the evidence in the present suit and in the decision of Judge Bourquin, appealed from, it very fully appears that the novelty of the agitation froth process is *novelty* in *kind* and *not* in *degree*. Judge Bourquin says:

> "The process in suit is so clearly new that no exhaustive discussion of facts, cases or law is necessary to distinguish it from other processes or to demonstrate its novelty. The patentees herein discovered a new, cheap, simple, practical, and useful way or process to combine oil and air, and, by agitation, to float and secure the metallic contents in ore concentration" (Rec., p. 42).

It appears in the evidence and is in fact stated in the opinion of the Circuit Ciurt of Appeals that petitioners' inventors were the first to employ oil in the minute quantity specified in conjunction with vigorous agitation of the pulp, and the first to discover the remarkable result that followed.

It appears also in the evidence that this discovery was made in the course of a series of experiments in which the conditions, including the quantity of oil employed, were progressively varied.

The Circuit Court of Appeals held that while this discovery was a valuable contribution to the art, it was merely a discovery of the smallest quantity of oil which would produce an old result and that the patent was merely an attempted monopoly of the right to use oil economically in an old process.

It is, however, mathematically demonstrated in the evidence (and is not contradicted) that the separation and flotation of the valuable metal could not be ac-

counted for on the *theory* or by the *mode of operation* of the prior oil flotation processes. The quantity of oil present was far below the quantity necessary for that sort of operation.

It appears, too, in the evidence (and is not contradicted) that when in the series of experiments referred to a certain point was reached in reduction of the quantity of oil—a point where the quantity of oil was already minute—the nature of the result began suddenly and quickly to change, and whereas reductions of the quantity of oil above that point produced progressively poorer results, continued reduction of the now minute quantity of oil below that point, produced a rapidly improving result, both unexpected and startling, accompanied by a wholly *novel* froth phenomenon, until the point specified in the patent was reached, when a maximum effect was produced (Rec., pp. 895-898; p. 356).

(Page 17):

It appears in the evidence, just as it appears in the judgments of the British courts, that the reduction of the quantity of oil to the minuteness specified in the patent, in conjunction with the vigorous action specified, induced a new and different principle and mode of operation, and produced a new and different result.

(Pages 18-19):

In both of the English cases the very question of law and fact at issue (and on which the question of infringement turned) was whether the novel procedure of petitioners' inventors, involving, as it did, the employment of a minute and almost infinitesimal quantity of oil in conjunction with vigorous agitation, introduced a substantially new mode of operation and produced a substantially new result when compared with

the prior Elmore processes, in which a relatively large and substantial quantity of oil was employed.

Similarly in the case before the Circuit Court of Appeals the very question at issue (on which the question of patentability necessarily turned) was whether the novel procedure of petitioners' inventors, involving, as it did, the employment of a minute and nearly infinitesimal quantity of oil in conjunction with vigorous agitation, introduced a substantially new mode of operation and produced a substantially new result when compared with the oil processes of the prior art, in all of which a relatively large and substantial quantity of oil was employed.

Main Brief, Final Hearing in Supreme Court.

(Pages 1-2):

The distinctive feature of the invention patented is the employment of air bubbles in co-action with a minute and critical amount of oil in a mixture of ground ore and water so as to produce upon the surface of the water a froth containing substantially all of the metallic particles which can be easily flowed off or removed.

This process was never used before. This result was never obtained before. The process is dependent upon the use of oil in a minute and critical amount and thorough aeration. If more oil is used, you do not operate the process, and you do not get the result. So also if less oil is used the process is not operated, and the result is not obtained. By using other and greater quantities of oil you operate a different process and you obtain wholly different results. That the critical amount of oil characterizing the process is a minute amount of oil (varying slightly with different ores and different oils) is merely a fortuitous circumstance. Nevertheless the process is dependent upon such definite minute amount of oil. Obviously therefore it cannot be said that the use of the minute amount of oil characterizing the process in suit, as compared with prior disclosures suggesting the use of greater amounts of oil, is a mere improvement in degree suggested by the desire to economize in the use of oil, since every prior disclosure with which the process may be compared was wholly different in characteristics and essential mode of operation and principles involved and result obtained. The process of the patent in suit evokes new principles, employs a new mode of operation, and produces a new result, not theretofore evoked, employed or produced.

(Pages 6-7):

The secret of the invention of the process in suit was the discovery that by the agitation and aeration of an ore pulp (water and finely ground ore particles, the water when in motion carrying the ore particles in suspension therein) in the presence of a mere trace of oil such that the metal particles were coated with a thin attenuated coating of oil, so thin as to be imperceptible to sight or touch and so attenuated as to exhibit none of the known properties of oil, air bubbles would be produced and controlled and made persistent that would firmly attach themselves to the metallic particles and by their buoyancy float the heavy metallic particles upward to and through the surface of the pulp, and form above and resting upon the surface of the pulp a floating layer—usually several inches in thickness—of a mineral froth constituted of such air bubbles carrying the metallic particles. This was accomplished in practice by the employment of oil in the minute proportion of one-tenth of one per cent. on the ore.

(Page 9):

The process of the patent in suit is commonly known as the flotation process, although it is often more specifically described as the agitation froth process. In carrying it on the ore is ground to a fine powder, finer than ever before, and thereby reduced to separate particles of valuable metal or metalliferous mineral (usually the sulphides of metals) and of worthless rock or gangue. These ground ore particles are mixed with a considerable amount of water so as to form a freely flowing pulp (four or five tons of water to one of ore). An oil is added in the singularly minute quantity or trace above stated, about one-tenth of one per cent. of the weight of the ore (two pounds of oil to a ton of ore

in about four or five tons of water, constituting five or six tons of ore pulp), . . .

(Pages 10-11):

This latter fact, namely, that the process is in each instance conditioned on the use of definite and astonishingly minute oil proportions (varying slightly with different ores and different oils), is one of the important facts that is clearly proved in the evidence in behalf both of complainants and of defendant which the Circuit Court of Appeals overlooked or disregarded. Defendant's foreman, after conducting defendant's process for many months, testified for defendant as to the working instructions received by him from defendant and which governed his operation of the process as follows:

> "I was instructed by Mr. Hyde as to the regulation of the supply of oil . . . to use oil . . . in such quantity as to produce the best result. I was told that the use of too much oil is indicated by a flat film on the surface of the water, the mineral forming globules and sinking; . . . that when too little oil is used, there is no separation of the minerals and waste." (R., Gibson, p. 75.)

From the above evidence of defendant and other abundant evidence in the record it appears that for a given ore and a given oil, a definite minute amount of oil is essential to the carrying on of the process; that any substantial increase or diminution of this critical quantity of oil impairs or destroys the process; and that the production of the peculiar mineral froth characteristic of the process is recognizable by metallurgists skilled in this new art as an infallible indication of the use of the process . . .

(Pages 11-12):

In the opinion of the Circuit Court of Appeals in the case at bar patentability is denied to this invention for the stated reason that a reduction in the quantity of oil from that of prior disclosures is a mere matter of *degree*. This rests upon the assumption that the result obtained by the process of the patent in suit could not have been obtained in the processes made known by prior disclosures, and that the only novelty of the patent in suit was the economical use of oil. This assumption has nothing whatever to rest upon and all the evidence in the case shows it to be a false assumption.

(Pages 12-13):

ERROR OF LAW IN THE OPINION OF THE CIRCUIT COURT OF APPEALS.

These errors of law may be summarized as follows:

1. In holding that the process of the patent in suit was devoid of patentable novelty, although admittedly novel in the matter of the minute quantity of oil used, and although admittedly highly useful and in extensive use, and although none of the alleged anticipating disclosures described a flotation process which had achieved any usefulness in the practical art.

2. In holding that the process of the patent in suit was a mere matter of economy in oil and followed naturally and without invention from what was previously known in the art; and in overlooking in that connection the testimony in the case which showed that all efforts to reduce the quantity of oil in prior commercial oil processes were failures, except in the Cattermole metal-sinking process, and that the patentees' efforts to economize oil in that metal-sinking process suddenly,

upon reaching a critical point of minuteness of oil quantity employed, reversed the entire phenomena, evoked opposite and unexpected and not even yet fully understood principles of action and modes of operation, and delivered the metal values at the top in a floating froth, the like of which for practical metal concentration purposes had never been known before.

(Page 15):

The Circuit Court of Appeals in its opinion says of the processes disclosed in prior documents and the process of the patent in suit:

> "The evidence in the case, together with the illustration thereof afforded by demonstrations of the various processes which were made in the aid of the argument before this Court, convince us that the froth in all these processes is the same, with the exception that there is *less oil* (*as there must necessarily be*), in the appellees' froth than in the others. The froths are all similar in appearance, they all rise to the surface after the same amount of agitation, they all gather with equal efficiency the same quantity of metal, and all may be removed from the surface in the same way." (R., pp. 720, 721; italics ours.)

It is respectfully submitted that the evidence in the case furnished no foundation whatever upon which to base a conviction "that the froth in all these processes is the same." The undisputed fact, so far as the evidence in the case is concerned, is that the metallic froth produced by complainant's process is unique and characterizes such process and distinguishes it from all other previous processes.

(Pages 36-37):

These theories of Professor Pollock which were accepted by the Privy Council as to the function performed by the minute proportion of oil used in the agi-

tation froth process, are acceptable today and upon the record herein, and it is only necessary to add to them the fact that the minute quantity of oil, besides performing the function of maintaining "extremely minute emulsion" and producing "permanency in the froth" or persistency of the air bubbles, coats the metal with a film so attenuated as to be almost infinitesimal, and mysteriously acts so as to increase the mutual attraction of the air bubbles with metallic particles and to cause them to persistently hold together in the rush and swirl of the agitation and until the froth has overflowed from the surface of the liquid and separately delivered the metallic particles; and that this operation takes place notwithstanding the fact that any substantial increase in the oil proportion above the critical minute proportion required with a given oil for a given ore destroys the operation of the process and produces a useless mode of operation approaching that of Cattermole in that the metallic particles tend to stick together and sink.

(Page 41):

The manner of conducting such simple preliminary tests, as they are being made every day in the laboratory of the complainants, and for that matter in the laboratories of the licensees, since every plant includes a laboratory to guide and check the larger operations of the mill, is described in the evidence (R., Chapman, pp. 191, 192). It will be noted that this description closes with the statement:

> "The greatest amount of oil that I have ever used in practice is 4 lbs. per ton of ore, and the smallest amount I have ever used in practice is one pound of oil per ton of ore." (R., p. 192.)

(Page 47):

Dr. Charles F. Chandler, who has educated more mining engineers than any other man and has been called upon to testify in all the principal metallurgical controversies for the past forty years, also describes this froth first produced by the process in suit (R., p. 382). At the conclusion of this description he says:

> "The oil has entirely disappeared from sight and sense. It cannot be seen and it cannot be felt, and the particles of mineral are just as bright as though there was no oil upon them at all." (R., p. 382.)

(Page 55):

Claim 9 is the broadest claim. The amount of oil is stated to be "a small quantity." The process is stated to include "coating the mineral with oil in water containing a small quantity of oil, agitating the mixture to form a froth, and separating the froth." The essentials of agitation of the ore in powdered form diffused in water in the presence of a small quantity of oil so as to form a froth and thereby to utilize air bubble separation, are set forth, as well as the completion of the operation of concentration or separation by separating the froth. The novelty of the invention as thus defined is unquestionable. Conditions may well arise in the future wherein the critical oil proportion is increased by reason of a useless absorption of the oil within the pores of a gangue material, or wherein an oil or a mixture of oils is employed having unusual characteristics, as a result of which the critical oil proportion may be one per cent. or slightly more. Under such conditions this and the two following claims may be necessary to protect the invention.

(Page 65):

He further testifies:

> "This plant was completed and adjustment runs made in or about April, 1905. . . . The oil consumption alarmed our clients, and I was instructed to use every endeavor to bring this down. This was only possible to the extent of .8% of the weight of the ore. The formation of good shotty granules was impossible under these conditions, mineral flocks being formed, and these readily separated on the skin flotation table. . . . The plant proceeded to run on these lines" (R., p. 186).

It will be noted that this effort by Mr. Chapman to economize oil consumption by spoiling the Cattermole process and producing a hybrid skin or film flotation process was carried on one month after the invention of the process here in suit, but in the Antipodes and in ignorance of the discovery of the process in suit, as will later appear. But even this use, subsequent to the present invention, with oil in the proportion of a large fraction of one per cent. of the ore, did not produce the floating froth, for had it been produced it would have gone to waste in the first upcast with the gangue slimes.

(Page 67):

It further appears that as to the seventh factor the actual instructions were to reduce the quantity of oil "step by step" (R., Ballot. p. 167), so as to find "the lowest limit at which results could be obtained by the use of oil" (R., Higgins, p. 180, last two lines). The work of Mr. Higgins under the supervision and direction of the inventors with all the factors that had been assembled in the researches of more than two years and a half as to the Cattermole process, and under particular and explicit instructions to reduce the oil step by step and note the results, brought about the discovery of the process of the patent in suit.

(Pages 70-71):

As to what was done under these instructions we have Mr. Higgins' report of March 16, 1905. The opening sentence of this report is as follows:

> "The effect of diminishing the percentage of oleic acid is to alter the type of oiling; the higher percentages producing granules, and the lower ones froth" (R., p. 448).

This is the first mention of froth in all of the reports. The writer's mind is evidently now directed away from metal sinking and towards this new process in which the metal floats in froth. Tests with oleic acid at from 3% on the ore downward are described, with no useful result in flotation, until suddenly with the oil at .32% on the ore the result is described as "float vastly increased," and with a further reduction to .1% on the ore we find again, as compared with what has gone before, "float vastly increased" (R., p. 448). This is the oil proportion recommended in the patent in suit.

(Pages 71-72):

. . . Thus the experiments were carried to the vanishing point and between that point and the minimum previous practice in the granulation process, to-wit: with oleic acid one and one-half per cent. on the ore (R., p. 445, *p. 891) was found this unexpected and startling phenomenon, the flotation of the metalliferous mineral in the form of froth. The experiments started with a metal-sinking process, dependent for its utility upon the agglomeration of metallic particles into granules of sufficient size to sink readily and certainly in an up-current which would carry away all the gangue particles. As the proportion of oil was diminished granulation became progressively poorer, and in fact disappeared. Then came the new phenomenon, with

new principles of operation and a new result. This attained its maximum when the oleic acid was present in the proportion of .1% on the ore.

(Page 74):

. . . In the process of the patent in suit this stickiness has disappeared altogether and does not interfere with the subsequent separation by physical treatment, although it may well be a factor in a subsequent chemical treatment. As above noted, the opinion of the Circuit Court of Appeals criticizes the invention and apparently declines to accept the proved fact that it is unnecessary to remove the oil from concentrates produced by the process of the patent in suit for subsequent physical treatment. . . .

(Pages 89-90):

During the progress of the suit the defendant's first plant was replaced by another apparatus substantially the same (R., Hyde, p. 95), and in it the same process was carried on. . . . Then he increased the cotton-seed oil to seven times the customary feed of oleic acid and also added "a few per cent. proportionate to the cotton-seed oil, of the 'red oil' " or oleic acid, and says he obtained good heavy froths and clean tailings, but in the absence of analyses or even samples of what he obtained, this may be doubted. If he did, however, he may have carried on the process first made known to the world by the patent in suit with something more than one per cent. of his peculiar mixture of oils, thereby accentuating the importance of those claims which point out the process without exact limitations of the amount of oil used, to-wit: claims 9, 10 and 11. The one thing that he did not do is significant. He did not vary the feed of the oleic acid alone, or, if he did, he does not tell us what results he obtained.

(Pages 196-197):

IMPRACTICABILITY OF METAL FLOTATION WITH QUANTITIES OF OIL LESS THAN ELMORE AND GREATER THAN THAT OF THE PROCESS IN SUIT.

With the use of oil proportions, between those of the Elmore oil-buoyancy flotation process (with its minimum of 100 per cent. of oil, or 2,000 pounds of oil to the short ton of ore and 2,240 pounds of oil to the long ton of ore), and the process of the patent in suit (with its minute oil proportions varying slightly for different ores and different oils, but never in practice greater than .18 per cent., or four pounds of oil to the long ton of ore and 3.6 pounds of oil to the short ton of ore, and averaging .1 per cent. or 2.24 pounds to the long ton of ore and 2 pounds to the short ton of ore) there is only one practical process of ore concentration and that is the Cattermole metal-sinking process. This is established by the history of the art of ore concentration as proved in the evidence, and by the careful consideration in the evidence of all prior documents.

It is proved that the admittedly novel minute oil proportions of the process in suit are critical proportions, invariable with a given oil and a given ore. The following testimony of Mr. Chapman, who installed and operated the process of the patent in suit in Australia, Finland, Sweden and Wales, as to this point, is uncontradicted:

> "110 Q. What has been your experience when, in using the agitation-froth process on a commercial scale, with a normal and proper consumption of one and a half pounds of oil per ton of ore, this procedure has been varied by increasing the oil feed to two and a half pounds per ton of ore?
>
> "A. The mineral froth being produced on the

spitz boxes loses at once some of its natural color and lustre and becomes dull in appearance. The quantity of froth being recovered on No. 1 box is considerably lessened. The froth on No. 2 spitz is slightly increased and the same with No. 3 box. The tailings on examination immediately show increased losses of sulphide mineral. These losses take the form of well oiled agglomerations.

"111 Q. And what has been your experience when the normal and proper feed of one and a half pounds of oil per ton of ore has been diminished to half a pound of oil per ton of ore?

"A. The froth being recovered immediately diminishes in quantity and the color shows the presence of slime gangue. The supporting liquor of the spitz box immediately changes in appearance and shows the natural color of the ore slimes. The tailings become very dirty and show no sign of what we know as a good 'clean up.' In fact the whole treatment suffers and unless the oil feed is restored to its normal condition a serious drop in recovery takes place with the production of a lower grade concentrate" (R., pp. 195, 196).

This evidence is not only uncontradicted, but corroborative of the evidence in behalf of the defendant of defendant's foreman, who, in describing the rules which governed his operation of defendant's infringing process, said:

"Too much oil is indicated by a flat film on the surface of the water, the mineral forming globules and sinking. . . . When too little oil is used, there is no separation of the minerals and waste" (R., Gibson, p. 75).

(Page 198):

. . . Notwithstanding this obvious fact, however, the defendant has endeavored to prove by laboratory tests in the slide machine that it is possible to concentrate ores by metal flotation with the employment of such oil proportions as are disclosed in prior documents. Additionally it has been falsely represented that

these laboratory operations carried on in the test machine of the process in suit (this test machine having been invented in 1909) and with the utilization of all the knowledge that has come to the art by reason of the process in suit, are representations of the disclosures of these prior documents, as is indeed necessary to give to these demonstrations any evidential value in behalf of the defendant; but as to this enough has been said in the chapters devoted to the respective prior documents.

In behalf of complainants, for the information of the court, tests were carried out, first, in a miniature of a commercial plant, used for testing purposes, and, then, in a small commercial plant, and the procedures in the slide machine with the amounts of oil in excess of the critical proportions of the process in suit were found to be hopeless and useless in anything approaching practical operations.

(Page 199):

Tests were also made by Mr. Chapman at London in the standard 50-ton plant with the only ore available there in sufficient quantity, Broken Hill tailings (R., p. 388), with cotton-seed oil in the proportion of 3.6 per cent. of the ore and oleic acid in the proportion of 1.8 per cent. of the ore. These tests are fully described and the results as shown by analyses set forth (R., pp. 388-392). The amount of metal lost in the tailings in the three tests with 3.6 per cent. of cotton-seed varied from 68 per cent. to 86 per cent.—an absolutely hopeless operation. The tailings contained granules and the granules from the tailings of test No. 2 are in evidence as "Complainants' Exhibit, Cattermole Granules Chapman London Test." Test No. 4, with 1.8 per cent. of oleic acid, was not so bad in loss of metal, which was

about 30 per cent., but the concentrate contained so much gangue "that it would not really be considered a concentrate" (R., p. 795).

(Pages 199-200):

. . . These tests made it quite clear that the laboratory operations carried on by Dr. Byrnes and alleged to represent processes of ore concentration were wholly incapable of producing any useful result in practice, and that the larger the plant the worse the result. Of course, the burden was on the defendant to show practical ore concentrating operations, to demonstrate that the verdict of practical men of the art in rejecting the procedure disclosed in prior documents was an erroneous verdict. Unable to prove practical use in the art of any of these paper processes, the defendant should at least have proved that they were capable of practical use.

(Page 203):

As to the finding by the Circuit Court of Appeals that the invention was merely a matter of degree—"a difference of degree and not of kind"—(R., p. 719), it is submitted that the evidence is conclusively to the contrary. As above noted, an increase in the quantity of oil above the critical proportions of the process in suit destroys the process. So also diminution in the quantity of oil destroys the process. The proper proportions are highly economical, but the process is as much dependent upon them as if they were prohibitively expensive. The economy of oil consumption is a highly meritorious feature of the invention, but the invention should not be condemned because of its merit in this particular.

(Page 204):

In prior efforts oil was the selective and separating agent and was an apparent factor throughout the procedure. The process in suit utilizes oil, it is true, but utilizes it as a bubble and froth controlling agent. The real flotative agent is air, functioning in the presence of a minute quantity of the oil or frothing agent, and the oil disappears from sight and touch, and does not prevent but to the contrary assists the firm attachment of the air bubbles and metallic particles.

Commenting on Judge Bradford's opinion, plaintiffs' counsel said in this brief:

(Page 254):

The question of invention. Judge Bradford had before him by stipulation the identical London evidence which was taken in the case at bar, with omission only of the matters personal to the defendant Hyde. His conclusions, therefore, from the facts and circumstances connected with the discovery of the process here in suit, were founded upon the record in that respect which is before this court. He also had before him all prior documents referred to in the opinion of the Circuit Court of Appeals in the case at bar, and also two prior documents not in evidence in the case at bar. His consideration of the question of invention commences at page 10 of his opinion. He says, in part:

> "There was, I think, patentable invention in the discovery thus made in March, 1905. Prior to that time there had been no suggestion in the art that the proportion of .1% of oil to ore or of any other fraction of 1% of oil to ore would or might result in successful concentration. Further, the result reached was an utter surprise. Experiments were conducted with reference to the Cattermole process, and all of the Cattermole patents required the formation and sinking of granules containing the

metallic particles, and not their flotation. The teaching of that process was that the metallic particles should go to the bottom and that of the process of the first patent in suit that they should go to the top'' (*idem,* p. 14).

(Page 256):

Judge Bradford then further says:

"... The patentability of the process of the first patent in suit resides in the use of only the minute quantity of oil contemplated by the patent. The reduction of the oil to this quantity effected a change, not merely in the degree, but in the 'type of oiling,' leading to results which cannot be accounted for on the assumption that a mere change in degree as distinguished from patentable discovery was involved'' (*idem,* p. 17).

(Page 258):

Claim 9. It will be noted that although Judge Bradford finds that the process is dependent on the extreme tenuity of the film of oil on the metallic particles and that the selective action is due to the air bubbles and that the process is "an air flotation process," he nevertheless limits the breadth of the claims to the carrying on of the procedure with the employment *in the pulp* of a fraction of one per cent. of oil on the weight of the ore.

(Page 259):

Claim 9, we submit (as well as claims 10 and 11, where the same language is employed), should be construed to save them rather than to destroy them (*ut res magis valeat quam pereat. Corning* v. *Burden,* 15 How., 269), in spite of the presence of other claims. Limiting words (as of degree) in a claim should be construed in the light of the disclosure made in the specifi-

cation and in the light of the real invention (*Carnegie Steel Co.* v. *Cambria Iron Co.,* 185 U. S. 403, 432. Robinson on Patents, Vol. II, p. 507, Sec. 751). So construed, claims 9, 10 and 11 would be limited to that small quantity of oil which is described in the specification and which would in use develop the operation and effect described and would embody the invention.

Petitioners-Complainants' Reply to Brief for Respondent.

(Page 1):

Brief for respondent presents a fictitious case and not the case presented by the record.

A fundamental fiction, and one which it is imperative for him to establish, is that with quantities of oil greater than the minute quantity characterizing the invention in issue, agitation will evoke the same principles of action and produce the same metallurgical results.

(Pages 3-5):

If the language of Lord Parmoor were susceptible of any such inferences as the respondent draws therefrom, the impossibility of such inferences being warranted is made entirely manifest by adverting to "question 5780 and the following questions," to which he refers. They are as follows:

(Page 473, Printed Record in the Privy Council, No. 7 of 1912. On appeal from the Supreme Court of New South Wales in its equitable jurisdiction between The Ore Concentration Company (1905), Limited, and Australasian Ore Concentration Syndicate, Limited, (Plaintiffs), Appellants, and Sulphide Corporation, Limited (Defendants), Respondents.)

> "5780 Q. Mr. Irvine: Now, I am going to ask you one or two questions with regard to the application of what you have been saying to the particular issues in this case. You have given us this selective action, if I may use such an expression, of bubbles as bubbles. You have told us of the increase of the selective action of these bubbles by the addition of a little acid, and you have pointed out the two functions which you say, in the defendants' process, or a process similar, are performed by the minute quantity of oil introduced; the two functions being the permanency of the froth, for the well rec-

ognized scientific reasons you have explained, and the other the extremely minute emulsion which is introduced in that case, but not where there is no oil. Now, I want to ask you, is there necessarily any other function performed in the defendants' process by that small quantity of oil introduced? A. I do not think so.

"5781 Q. It has been suggested—in fact it has been stated very distinctly by some of the witnesses—that even with that extremely minute quantity of oil there must necessarily be a greasing or oiling of all the metal particles. What do you say with regard to that? A. The oil may be in excess and some of the particles may get oiled, but in my opinion, it is quite unessential—entirely and absolutely unessential.

"5782 Q. First of all, with that minute quantity of 1½ lbs. of oil, say to the ton; is it possible to affirm that there is more oil introduced than is necessary for the concentration you have been speaking about? A. I do not think so.

"5783 Q. Mr. Irvine—or filming purposes? A. I do not think so, because it would be impossible to calculate the entire surface of the enormous number of bubbles.

"5784 Q. You could not affirm in fact, whether there is or is not a surplus of oil? A. I do not think so.

"5785 Q. Unless you can somehow approximately measure the surface of all the multitudinous bubbles in that emulsion? A. Yes.

"5786 Q. Well, it has been further stated that the selective action—that is the picking out by the air bubbles, or gas bubbles, of the metallic particles from the gangue will not take place unless those metallic particles are greased. What do you say to that? A. I do not agree with that at all.

"5787 Q. You do not agree with that? A. No.

"5788 Q. And that is why you say the greasing is quite unessential to this process. A. Yes, if it occurs.

"5789 Q. Whether it does or does not occur, as I understand you, must be a matter of conjecture?

"A. Yes."

(Page 5):

It is luminously clear that Prof. Pollock did not testify that ore concentration or concentrate froths could be formed by the use of more than one per cent. of oil; it is clear that testimony that such concentration could be effected by "from less than 1 per cent. to 25 per cent. by weight relative to the ore treated" is not in accord with Prof. Pollock's testimony as respondent asserts.

(Page 6):

II. In support of the proposition that "ores that can be floated with less than 1 per cent. of oil can be floated with more than 1 per cent.," respondent's brief cites the testimony of Mr. Nutter, chief engineer of Minerals Separation, Limited, pages 63 to 66, where he sets out the customary procedure in the treatment of a new ore, and, among other things, speaks of altering the quantity of oil in adjusting to new conditions.

But the alterations in quantity of oil referred to by Mr. Nutter were minute alterations, all well within the limits of the quantity specified in the patent in suit. It is the astonishing fact that, so far as the record here shows, with every ore the world over to which the process has been applied and with all the varying conditions of use, the largest quantity ever used has been 4 pounds to the long ton (*i. e.*, less than 2/10ths of 1 per cent.), and that the smallest quantity has been 9/10ths of a pound per long ton of ore (*i. e.*, less than ½ of 1/10 of 1 per cent.). (See Brief for Petitioners-Complainants, pp. 41 and 42.) The defendant uses 3.2 pounds of oil per ton of ore (*i. e.*, .16 per cent of the oil—less than 2/10ths of 1 per cent.). (See Brief for Petitioners-Complainants, p. 88.)

It is such alterations in quantity of oil as these that Mr. Nutter referred to. Respondent's deduction from his testimony is wholly unjustified.

(Pages 6-7):

III. Respondent's brief, in support of the proposition that the process of the patent in suit proceeds when the quantity of oil is more than 1 per cent., cites the evidence of Mr. Higgins, the metallurgist engineer for Minerals Separation, Limited, . . .

But reference to the record, page 387, shows that Mr. Higgins' testimony has been misrepresented. The froth produced, he says, did not differ in appearance from the usual agitation froth at a distance of a few feet, "though oily in appearance when closely examined." "These floats were exceedingly dense and occasionally fell down in large masses. The tailings contained some granules, and did not indicate a satisfactory recovery." It also appeared that the recovery was only 50 per cent. of the zinc, which means that 50 per cent. of the zinc was being thrown away in the tailings—a useless and hopeless result. He further testified: "This plant is not intended for commercial use in treating zinc ores, being only a testing plant."

(Pages 8-9):

V. Respondent's brief, on pages 46 and 47, refers to certain floating froths or oil magmas produced in the laboratory by the defendant, James M. Hyde, and his expert, Dr. Eugene A. Byrnes, with quantities of oil ranging up to 25 per cent. of the weight of the ore, as evidencing that the same result obtained by the process of the patent in suit may also be obtained by the use of such larger quantities of oil.

But these tests do not support the conclusion drawn

from them. They never went beyond the laboratory. There is no evidence that they would be of the slightest utility in the mill, or that they could ever be carried out practically in the mill, or that they were in any proper sense metallurgical processes for the concentration of ores.

There is no evidence to indicate that any such processes were ever used with any practical success in the mill. There is affirmative evidence to the contrary.

(Page 9):

It is in the highest degree significant that the respondent, instead of demonstrating the practicability in the mill of a process of ore concentration involving the use of notable quantities of oil, as it could perfectly well have done, if any practicable process of that kind existed or were possible, contented itself with the legerdemain of the laboratory, wholly inconsequential even at best in its implications, and stands here and now upon misrepresentation of the testimony of petitioners-complainants' witnesses and of the Privy Council decision.

Oral Arguments Before the Supreme Court.

(Pages 8-9):

MR. WILLIAMS: I have tried to picture the process. The process is today a mystery so far as complete scientific explanation is concerned. We cannot explain why the little air bubble holds on so tightly to the metallic particle. The presence of a minute amount of oil, we know, keeps the bubbles little, or makes them little. We know it makes the little bubbles persistent, practically permanent, so that they rise up through the water without coming together and forming larger bubbles, and when they get on top they stay there. Apparently they will stay there forever without bursting. We know that the minute amount of oil that we use does those two things, makes for very small bubbles and for persistency in the bubbles and froth.

. . . We know that air bubbles have a strong affinity for metallic particles, and we know also that oil in any more than our quantities destroys that attraction of the air bubble to the metallic particle. We know that, but why the minute amount of oil adds to the attraction of the bubble and the metallic particle, we do not know.

(Page 10):

The Cattermole process uses so much oil that the metal particles will stick together. Pursuing a line of investigation for the purpose of improving that process in all its factors (and those facts were violent agitation and the use of heat, the use of acid, sulphuric acid, used only for its physical effect, and the use of an oil, but in such proportion that it made the particles stick together), we said: We will now reduce the amount of oil and under these conditions that we have assembled

we will keep on reducing and see what happens. We kept on reducing it and suddenly the process changed. Instead of the particles going down they rose in a great black froth. That was the discovery, although we cannot explain it today.

(Page 12):

The amount of oil that we use is generally one-tenth of one per cent. on the ore; two pounds of oil to the short ton of ore. Every ore presents its own problem, but for a given ore and a given oil there is a certain critical factor. The variations in that factor in practice have been from a trifle less than one pound of oil to the long ton in the case of the rich ores of Australia to four pounds of oil to the long ton in the case of a lean copper ore at the Braden mines in Chile. Those are the variations of different oils and different ores, and because of those minute variations you have the impossibility of saying that this process always uses just so much; but given any ore and given any oil, the evidence shows that if you add another pound of oil your metal particles commence to stick together and commence to fall down in granules, and you get into the Cattermole sinking sphere, whereas, on the other hand, if you diminish it, you cease to have that selective action which is essential; you do not get any float in particular and you have gangue in it; so that it is critical for a given oil and a given ore, but it has variations.

(Page 13):

MR. JUSTICE DAY: Let me understand you. What do you claim is the invention you made inasmuch as oil was used for this purpose before your invention? Just what is the step you take that you claim constitutes invention?

Mr. Williams: The step that we took was the use of a minute amount of oil as compared with anything that went before, associated with such conditions that the air bubble was capable of doing its work.

Mr. Justice Holmes: All previous methods were by sinking and this one is by flotation?

Mr. Williams: That is not wholly true. The Elmore oil buoyancy, with a ton of oil to a ton of ore, floated. Then the Cattermole sunk, using a proportion of oil which at its very minimum was 1½ per cent., or 30 pounds to the ton of ore, a sufficient amount of oil to moisten the metal particles so that they would stick together.

Mr. Justice Day: You greatly reduce the amount of oil. What else did you do? I would like to understand the operation.

Mr. Williams: As compared with Cattermole, we greatly reduced the amount of oil and nothing else—as compared with Cattermole, a metal sinking process.

(Page 16):

Then came Cattermole. Cattermole is a process of sinking wherein you use as a minimum one and one-half per cent. of oil, or thirty pounds of oil to the short ton of ore, but Cattermole is particularly and specifically described as a process that cannot be used with lean ores.

(Page 21):

Now, Professor Pollock's testimony, as summarized by the Privy Council: "He allows that there may be oil in excess" of what is necessary for permanency of froth and extremely minute emulsion within this minute proportion of two or three pounds to the ton, "and that some of the particles may get oiled, but states that

this is entirely and absolutely unessential"; that is to say, with two or three pounds of oil to the ton of ore he thought that oil just did the work of making permanency and minute emulsion, and that it did not necessarily coat the metal; but if it did coat the metal, then the part that coated the metal was an excess; that was the sense in which he used the word "excess." If some little fraction of that minute fraction did coat the metal, why it was absolutely unessential to his theory.

> "He does not, however, think that more than the necessary quantity of oil is introduced to effect concentration, but that having regard to the nature of the problem it is a matter of conjecture, and exact calculation is not possible. Finally, he reiterates his opinion that the defendant's process can be accounted for without assuming selection of the metallic particles by oil."

We are in entire agreement with him that selection of the metallic particles by air bubble is a characteristic thing of the process, but we disagree with Prof. Pollock as to the fact that the particles may or may not get oiled. We say we are quite sure that the particles do get oiled with this minute attenuated coating.

(Pages 33-34):

. . . As to Everson and Kirby, they did not give us any assay, and the evidence shows nothing. But as to a procedure which at one time was called Froment and at another time Schwarz, they gave us an assay, and they did get up a fair amount of metal within the walls of this little test machine of ours. That had never happened before. Under the conditions under which they carried it on, there should have been a Cattermole operation, but they managed, by the very intensity of their agitation, to prevent granules from sinking, and, perhaps, by the brevity of their agitation, to prevent

the granules from forming. So they got a float which had never been obtained before, and it surprised us, and we said: We will carry out these operations on a larger scale and see what happens. It is true it is the invention of the defendant's expert. It is not a part of the prior art, but for the information of the court we will carry it out on a larger scale. So we had Mr. Higgins carry out the same operation, practically the same, with 3.6 per cent. of oil, in a little testing plant which was available at the mines of Senator Clark in Butte, Montana. It was only a little plant. It was not a full size operation. In that operation he lost 50 per cent. of his metal. He said that it fell down in bunches when it spread out on the surface of the spitzkasten, and although at a little distance it looked like our floating froth, on close inspection it was found to be an oily floating mass. It fell down in bunches, and it only saved 50 per cent. of the zinc and threw away the rest of it. But we were not satisfied with that. We took the smallest full-size plant, the 50-ton plant, through which 50 tons of ore are carried by 200 tons of water in twenty-four hours, and we carried out an operation in that, and there the loss was 82 per cent. It was hopeless. So that we demonstrated the negative of the proposition that the defendant had failed to demonstrate. We demonstrated that these products of the legerdemain of the laboratory, not prior art at all, were worthless in the concentration of ores, wholly regardless of the question of the cost of oil or anything else.

Argument of Mr. William Houston Kenyon in Reply for Petitioners-Complainants.

(Page 84):

Another line of investigation was as to the influence of changes in the amount of oil (page 447, the seventh item). Out of that series of experiments (where the only change made from experiment to experiment was in the amount of oil—a gradual diminution in the amount of oil, all other things remaining the same) was born this invention.

And the record of it is right there on page 448, "Details of Experiments," the last column, "Remarks," "Float vastly increased"—tracing that back you see it was with three-tenths of one per cent. of oil; and just below "Float" again "vastly increased"—tracing that back it was with one-tenth of one per cent. of oil.

This float phenomenon appeared (page 451) when the oil had been reduced to about one-half of one per cent., said the inventors, after studying the process six weeks.

As the amount of oil was reduced granulation practically ceased at a range of about one-half of one per cent. of oil, but a certain amount of black mineral froth was noticed. They were trying to send the values down, but they began to come up to the top.

MR. JUSTICE DAY: Is that on page 451?

MR. KENYON: Page 451, the third paragraph.

> "A certain amount of black mineral froth was, however, noticed as a result. On successively decreasing the amount of oleic acid below .5 per cent. [that is one-half of one per cent.] it was found that whereas granulation ceased there was a growth in the amount of mineral float-froth under these conditions, and that the production of such float froth appeared to reach a maximum when about .1% of oleic acid on mineral was used."

If that evidence is true, it disposes of the contention that this phenomenon which has revolutionized ore concentration the world over is to be explained as some trick of agitation.

(Page 85):

MR. JUSTICE MCREYNOLDS: I would like to ask you when in this process of reducing oil your invention came into existence?

MR. KENYON: At about one-half of one per cent. of oil.

MR. JUSTICE MCREYNOLDS: Before you got to the one-half of one per cent. did you have any invention?

MR. KENYON: We were passing from the region of Cattermole, which was a distinct——

MR. JUSTICE MCREYNOLDS: I want to know when your invention came into existence?

MR. KENYON: This invention was not reached, I should say, from those figures, until about .5, that is, one-half of one per cent., of oil was reached.

MR. JUSTICE MCREYNOLDS: At one per cent. you had no invention?

MR. KENYON: No.

MR. JUSTICE MCREYNOLDS: At one-half of one per cent. you did have invention?

A. It began to come. Remote, but it began to come. At .3 of one per cent. the float vastly increased. At .1 of one per cent. the float again vastly increased.

MR. JUSTICE MCREYNOLDS: When this float has more than one-half of one per cent. of oil it does not infringe?

MR. KENYON: It does not infringe.

MR. JUSTICE PITNEY: What have you to say in answer to what Mr. Scott said the other day to the effect

that 1.8 per cent., or perhaps more, of oil would give the same result with increased agitation?

MR. WILLIAMS: Absolutely no.

MR. KENYON: It would not.

MR. JUSTICE PITNEY: I understood him to say so yesterday, and I suppose there was something in the record to justify it.

MR. KENYON: Nothing. That will be a part of my argument.

(Pages 86-87):

In this froth the metal values are carried by myriads of minute air cells whose walls are constituted of persistent films of water contaminated by a mere trace of oil. (Record, page 235, at the middle.) The oil is invisible. The color of the metal gives the color to the froth.

If a larger quantity of oil be added to the pulp, for example, two or three per cent., the Cattermole effect appears. With the same identical agitation the oiled metal particles agglutinate and sink. The values are taken away at the bottom. This larger quantity of oil on the metal particles destroys the attraction of those particles for air cells, as evidenced by the fact that air is beaten into the pulp in the Cattermole agitation just the same as in the identical agitation in the process in suit, but it does nothing and escapes and, in spite of it, the values go to the bottom.

MR. JUSTICE HOLMES: That is the formation of globules.

MR. KENYON: The formation of globules. It utilizes the stickiness of oil.

If still more oil than Cattermole proportions be added to the pulp, too much to act as an agglutinant, the same agitation will beat it up into a pasty magma or oil

emulsion, no matter what the quantity of oil, entrapping air cells and metal particles, but having little affinity for either, and destroying their affinity for each other.

No such oil magma froth has ever concentrated ore successfully in the mill. Dr. Byrnes, defendants' expert witness, in 1911 (Record, page 118, at the bottom, and 119) says: No oil process of ore concentration was in use in this country at that time except defendants—and, I might add, that came from plaintiff.

These oil magmas or froths with any amount of oil can be readily produced in the laboratory. But they are mere laboratory freaks, absolutely useless in the mill. In the mill granules would tend to form and go to the bottom. The froth would be fragile and drop in great chunks. It would not hold onto the metal. It would be unreliable and uncontrollable.

(Pages 87-88):

If respondent tomorrow repeats the tests set out in his record, he will be doing what is nowhere shown in any part of the prior art, as our brief points out in detail.

MR. JUSTICE PITNEY: He will be doing what?

MR. KENYON: He will not be carrying out the processes of the prior art.

MR. JUSTICE PITNEY: What will he be doing?

MR. KENYON: He will be performing tests with large quantities of oil, just laboratory tests that he arbitrarily chooses to perform. He will give them the names of old processes; he will call them Everson, Kirby, Froment, but they will not be either of those three.

1. They will be carried on in modern machinery not known at the time.

MR. JUSTICE MCKENNA: Pardon me one question.

Will they be using more than one-half of one per cent. of oil?

MR. KENYON: Yes, sir; anywhere up to 25 per cent.

MR. JUSTICE MCKENNA: Yet they result in the production of a froth?

MR. KENYON: You will have an oily mass or magma at the top, but it will not do anything towards concentration of ores. I am coming right to that point now.

2. They will be carried on with a violence of agitation that was unknown to any of the processes of the prior art. Our brief at pages 211 to 216 points out the law that that is not the way to demonstrate prior processes, and this Privy Council case which has been referred to here is an English authority directly to the point——

MR. JUSTICE MCKENNA: How near will they get to the patent in suit?

MR. KENYON: It will be absolutely outside of the patent in suit.

3. Finally, such oil froth processes are absolutely not usable in the mill at all. To demonstrate that I want to turn to the evidence of Dr. Byrnes, for the defendant. I presume this will be one of the tests that will be shown you tomorrow. I do not know what it will be called tomorrow. Record, page 108. Second experiment Froment. 3.6 per cent. of cotton-seed oil agitated in our slide machine, about two pounds of the ore treated. Result: his tailings showed only one per cent. of zinc—wonderfully clean tailings; his recovery, as figured by Dr. Liebmann (page 299) was about 100 per cent. of the values—a remarkable recovery.

We followed identically the same process first in a seven-ton a day plant, a semi-commercial plant, and then in a fifty-ton a day plant, a full commercial plant —to see what would happen. We did just the things

there that Dr. Byrnes did in the laboratory. Mr. Higgins testifies as to the first at page 387 of the Record. Result: his tailings showed 12 per cent. zinc, and his recovery was only 50 per cent. of the values. Half of the values were gone. He says the float fell in masses; that the tailings had some granules (the Cattermole effect had been to some extent produced); that the recovery was not satisfactory.

(Page 89):

MR. JUSTICE MCKENNA: Your contention then is that the laboratory test is no standard.

MR. KENYON: Yes, sir; absolutely no standard whatever.

MR. JUSTICE MCKENNA: Do you admit that the laboratory tests show a similarity?

MR. KENYON: Yes. I cannot myself tell one float from another by visual observation. But the mill man will tell you the instant he tries to carry out the process in the mill.

Indeed even minute departures in the mill from the standard oil quantity needed for the particular ore are harmful, and I want your Honors to mark page 196 of our brief on that point.

Mr. Chapman was asked:

> "What has been your experience when, in using the agitation-froth process on a commercial scale, with a normal and proper consumption of one and a half pounds of oil per ton of ore, this procedure has been varied by increasing the oil feed to 2½ pounds per ton of ore?"

Note: This was only a small increase.

He says the tailings, on examination, immediately showed increased losses of sulfide mineral. The result was harmful.

Then he was asked, what if you diminish the oil to half a pound of oil per ton of ore? He answered:

> "The whole treatment suffers, and unless the oil feed is restored to its normal condition a serious drop in recovery takes place with the production of a lower grade concentrate."

And defendants' foreman, Gibson, testified (Record, page 75):

> "Too much oil is indicated by a flat film on the surface of the water, the mineral forming globules and sinking. . . . When too little oil is used, there is no separation of the minerals and waste."

(Page 90):

MR. JUSTICE MCKENNA: Are there any experiments on the other side showing more than laboratory tests?

MR. KENYON: No, sir. They stop with laboratory tests. Tomorrow you will see, but you will not know. The layman cannot tell the useful froth of the process in suit from a useless oil emulsion; whether it is a step in a real process of ore concentration or only a sham; whether it can be reproduced in the mill or not, or would treat or successfully concentrate ore. It is a situation for caution, especially as the court below was misled by just such demonstrations.

(Page 91):

4. It is apparent that the inventors in their minute one-tenth of one per cent. oil frothing reagent were really invoking a characteristic and a power of oil in an ore concentration process that develops only in that relatively microscopic quantity, and which is defeated and disappears when that minute quantity is even slightly exceeded, a characteristic and a power of oil which had not existed in the prior oil concentration

processes of the art, which had never been utilized by anybody for ore concentration, and the very existence of which had not been known or suspected. They were invoking the power of oil when present in microscopic amount to exercise the powers of the air to search out and find in the swirling vortex of the pulp, and hold on to through the seven or eight or ten minutes of agitation, and safely bring to the top, at the end, the valuable mineral particles and hold on to them there until they could be floated away. They harnessed the giant of the air to their task, and the oil was only curb and bit. It was a wholly new role for oil to play, a wholly new function for oil to perform, a wholly new combination of oil and air. That takes this process right out of the oil concentration art. It is not a process of oil concentration. It is a process of air concentration, as both the House of Lords and the Privy Council have held.

Reply Argument of Mr. Williams Before Judge Bradford, Miami Case.

(Pages 293-294):

THE COURT: I was going to ask this question:

This case has been argued and presented on the part of the complainant in such a way as to impress the court with the idea that it is contended that the reduction of the oil to very minute quantity brings about this startling result that has been referred to by counsel.

What I should like to get at, if it is possible, is, what are the limits claimed by the counsel? It seems to me to be very indefinite, and, of course, the statement is made that nobody understands exactly why it is; but there ought to be, it seems to me, some way of ascertaining, with more or less approximation or definiteness, the amount of oil which is necessary to produce that result.

MR. WILLIAMS: The patent gives us a measure. The measure given can be applied over and over again in the mill. You must reduce below the proportions that will give you the Cattermole effect. The specification says: We have found that reducing the oil below that of the Cattermole process we get this new result. And it is in the record that in the mill, if you increase the oil, immediately you have the appearance of the Cattermole operation, you immediately find in your tailings Cattermole granules or flocks of metal that have not quite formed granules. As Mr. Atwater said, increase the oil and your plant commences to Cattermole. And that everywhere in the mill, is a sure indication that you are departing from our invention.

THE COURT: You contend that when you get below Cattermole you enter upon your domain?

MR. WILLIAMS: Yes. And that is but a repetition

of the exact experiments which took place at the discovery of the invention. That thing can be repeated over and over again. Adjust your plant properly for the agitation air froth, add a little more oil, and you at once go toward the Cattermole conditions, you are departing from the invention; reduce the oil and you come back again. Over and over again that can be done.

(Pages 294-295):

The experiments made at the discovery tell that story. As the oil was reduced step by step, not gradually, but suddenly, this float came to the surface. Mr. Higgins said the float vastly increased upon a reduction to about .3 per cent., and then when he went down to .1 per cent., again, by contrast with what had gone before, the float vastly increased, and in his examination, which was, of course, cross-examination by defendants' counsel, an effort was made to lead him to say that there was a gradual change, and he said no, that it was a sudden change. Suddenly this black froth came up. (Printed Rec., p. 215, Qs. 67-69.)

Now, adjust the plant to produce this froth, then change your conditions and add a little oil, and back you go to Cattermole. Nobody else went below Cattermole. Cattermole is the line of demarcation between what anyone else did and what we did in the first patent in suit.

(Pages 296-297):

The Court: Will you pardon me just at this point? I want to get your idea right there. You say the change is a very sudden one, that you began, and suddenly you noticed a radical change. That is right, is it?

Mr. Williams: That is right.

THE COURT: And you say there was no slow gradation?

MR. WILLIAMS: No, no slow gradation at all.

THE COURT: But a sudden change. If you reduce the oil below a certain limit which is not named, then you get the result which you claim, just exactly as if a see-saw were just about balanced, and you put a pound weight on the other end, and that end would go down.

MR. WILLIAMS: Yes, your Honor.

THE COURT: Just as marked as that?

MR. WILLIAMS: It is as marked as that, and the evidence establishes that.

3081

United States Circuit Court of Appeals,

FOR THE NINTH CIRCUIT.

BUTTE AND SUPERIOR MINING COMPANY,
Defendant-Appellant,

vs.

MINERALS SEPARATION, LIMITED, ET AL.,
Plaintiffs-Appellees.

ORAL ARGUMENTS FOR APPELLANT.

FILED
APR -2 1910

Opening Argument of J. Edgar Bull, Esq.

MAY IT PLEASE THE COURT :

This is an appeal from the decree of the District Court of Montana sustaining the patent in suit and finding infringement by the defendant in all its flotation processes up to the present time.

The patent in suit is the patent to Sulman, Picard and Ballot, No. 835,120, for a process of ore concentration. With the court's permission, I will hand up copies of the patent.

All of the claims of the patent, excepting 4, 8 and 13, are in issue.

JUDGE HUNT : All excepting claims 4, 8 and 13 ?

MR. BULL : All excepting 4, 8 and 13.

This court is already familiar with this patent. It was before it in the case of Mineral Separation, Limited, vs. Hyde, when this court held the patent invalid. That case went to the Supreme Court of the United States by *certiorari* ; and that court found certain claims of the patent to be valid ; it found other claims of the patent to be invalid. And, therefore, it very definitely and finally determined the metes and bounds of this patent here in suit.

That decision of the Supreme Court is the law of the land respecting the construction of this patent. So we begin this case, may it please your Honors, with that decision of the Supreme Court in the Hyde case already written into your Honor's opinion in this case.

I shall confine my argument to two points. In the first place I shall discuss the question of infringement. That will require your Honors only to study and apply the decision of the Supreme Court to the facts of this case. In the second place, I shall discuss the question of the disclaimer which was filed by these plaintiffs subsequent to the decision of the Supreme Court in the Hyde case. That question will require your Honors only to decide a pure question of law. My argument will be rigidly limited to these two points.

The process of the patent in suit is extremely simple. It consists in mixing powdered ore with water; usually about one ton of ore is mixed with four or five tons of water,

forming a freely flowing pulp. An exceedingly small amount of oil is then added. That amount is stated in the patent as being between one-half of one per cent. and one-fiftieth of one per cent. on the ore. After this relatively microscopic quantity of oil is added, the pulp is agitated vigorously, and a froth forms on the top which carries most of the metalliferous contents; and when that froth is separated from the pulp, the process is completed. So the process is the essence of simplicity in itself.

Before the Supreme Court's decision was handed down, the defendant used this extremely small fraction of one per cent. which is described in the patent—about one-tenth of one per cent. of oil. Since the decision of the Supreme Court was handed down, defendant has always used oil in quantities of more than one-half of one per cent., and, for substantially the whole of the time, it has always used oil in quantities of more than one per cent. on the ore.

We admit that the earlier practice of the defendant (using oil in quantities less than one-half of one per cent.) was an infringement of this patent as sustained by the Supreme Court. But we contend that its later practice (using oil in quantities above one-half of one per cent.) did not infringe the patent, as it has been construed by the Supreme Court. So the nub of this controversy is the question whether the use of oil in quantities above one-half of one per cent. constitutes an infringement of the claims—the valid claims—of this patent, as they have been construed by the Supreme Court.

I will begin by reviewing very briefly the decisions of the various courts which have considered this patent. I will take them up in chronological order. But before I do that, I will ask your Honors to look at the claims of the patent and observe that they are divisible into two groups. I will begin by reading claim 1:

"The herein described process of concentrating ores which consists in mixing the powdered ore with water, adding a small proportion of an oily liquid having a preferential affinity for metalliferous matter (*amounting to a fraction of one per cent. on the ore*), agitating the mixture until the oil-coated mineral matter forms into a froth, and separating the froth from the remainder by flotation".

You will see that claim 2 contains that same phrase: "*amounting to a fraction of one per cent. on the ore*".

You will see that claim 3 contains that same phrase: "*amounting to a fraction of one per cent. on the ore*".

Claim 4 is not in issue.

Claim 5 contains the statement in line 4: "*amounting to 0.02–0.5 per cent. on the ore*".

Claim 6 contains the same statement: "*amounting to 0.02–0.5 per cent. on the ore*".

Claim 7 contains the same statement: "*amounting to 0.02–0.5 per cent. on the ore*".

Claim 8 is not in issue.

Now, if you will turn over to claim 12, you will see that claim contains the limitation, in line 4: "*amounting to a fraction of one per cent. of oil on the ore.*"

I will call that group of claims the "*fraction-of-one-per-cent.*" claims.

Now, if your Honors will look at claims 9, 10 and 11, you will see that they contain no reference to a "fraction of one per cent." They substitute, in place, the words, "*a small quantity of oil.*"

Claim 9, the last line, almost the last words of that line: "*containing a small quantity of oil.*"

Claim 10, the same words: "*containing a small quantity of oil.*"

Claim 11, contains the same words: "*containing a small quantity of oil.*"

I shall call that group of claims the "*small-quantity*" claims. They are not limited to a *fraction of one per cent.*; they are broad enough to cover *any small quantity* of oil.

Now, this patent first came before the District Court of Montana in the Hyde case. That court did not regard the use of this fraction of one per cent. of oil as of the essence of the invention. It regarded the invention as being broad enough to cover the production of a froth by the use of oil. It did not regard the quantity of oil used as of the essence of the invention. It therefore sustained not only the fraction-of-one-per cent. claims, but it *also sustained the small-quantity claims.*

The case then came before this court on appeal, and this court took an entirely different view of the subject-matter.

This court found that the essence of the invention was in the relatively microscopic quantity of oil used.

I will ask your Honors to read with me a few extracts from your decision in that case. We have here all the opinions bound together for convenience, and if your Honors will turn to page 22 of this pamphlet, the middle of the first paragraph, you will find this court said :

> "That which is presented as new in the patent, and as the *pivotal discovery* on which its validity depends, is the formation of a froth or scum containing the metalliferous matter produced by agitation of the pulverized ore in water, by the action of oil in a quantity *less than one per cent.* of the quantity of ore treated."

Now, if you will turn to page 26, beginning with the paragraph near the middle of the page—this court said :

> "When the claims and the description of the process of the appellees' patent are compared with the patents of the prior art" [your Honors had just before that taken up the prior art patents and discussed them one by one, and you continue as follows] : " it will be seen that the *only material difference* is in the *smaller* quantity of oil which the appellees use."

Now, if you will turn to page 35, the third line of that first paragraph—you said :

> "What they claim to be the new and useful feature of their invention, as stated by their counsel, is 'agitating the mixture to cause the oily coated mineral to form a froth.' As we have seen, that feature was *clearly anticipated* by the prior art, and when the elements of the appellees' claims are read one by one, it will be found that *each step in their process* is fully described in more than one of the patents of the prior art, with the *single exception of the reduced quantity of oil which they used.*"

I may say that your Honors in that opinion pointed out that it was old in the art to use quantities of oil as little as *one per cent.*, but it was new to use oil in these extremely small quantities which are described in this patent. Your Honors

held *as a matter of law* that that difference did not constitute patentable subject-matter.

The patent next went before the District Court of Delaware, Judge BRADFORD. Judge BRADFORD reviewed the prior art and agreed with this court in finding that the essence of the invention—the new thing—was the use of these extremely small quantities of oil—these microscopic quantities. He said, in his opinion at page 88 :

> " The patentability of the process of the first patent in suit resides in the use of oil in the *extremely minute proportion* disclosed in the descriptive portion of the patent to effect separation of froth with its metallic particles from the remainder of the mixture by flotation. The amount there disclosed is not in excess of '*a fraction of one percent. on the ore*', and may be only one-tenth of one percent on the ore, or even less."

Judge BRADFORD viewed the patented process as your Honors viewed it—that is to say, he found that the essence of the invention was in the use of these extremely minute quantities of oil. Therefore, while he sustained the fraction-of-one-per-cent. claims, *he condemned as too broad, and therefore invalid, the small-quantity claims.* In other words, he held that these patentees were not entitled to claim the use of a *small quantity* of oil, because that was old. All they were entitled to claim, he held, was the use of this extremely small fraction of one per cent. of oil.

The patent next came before the Supreme Court in the Hyde case ; and that court agreed with this court, and with the District Court of Delaware, in finding that the essence of the invention was in the use of this extremely small fraction of one per cent. ; and, the Supreme Court, therefore, just as Judge BRADFORD had done, while sustaining the fraction-of-one-per-cent. claims, *condemned and held invalid the small-quantity claims*—held them invalid because they were too broad. Let me read very briefly from the decision of the Supreme Court, at page 109 of this pamphlet, beginning at the second paragraph :

> " The prior processes which we have described required the use of so much oil that they were too expensive to be used on lean ores, to which they were

> intended to have their chief application, and the efforts of investigators for several years prior to the discovery of the process in suit had been directed to the search for a means or method of *reducing* the amount of oil used, and it is clear from the record that approach was being made, slowly, but more and more nearly to the result which was reached by the patentees of the process in suit in March, 1905."

Turning now to page 115, beginning two lines from the bottom of that page:

> "While we thus find in favor of the validity of the patent, *we cannot agree with the District Court in regarding it valid as to all of the claims in suit*"—

Your Honors remember that the District Court had found these small-quantity claims valid, and the Supreme Court said:

> "While we thus find in favor of the validity of the patent, *we cannot agree with the District Court in regarding it valid as to all of the claims in suit.* As we have pointed out in this opinion, there were many investigators at work in this field to which the process in suit relates when the patentees came into it, and it was while engaged in study of prior kindred processes that their discovery was made. While the evidence in the case makes it clear that they discovered the final step which converted experiment into solution, turned failure into success, yet the investigations preceding were so informing that this final step was not a long one, and the patent *must be confined to the result obtained by the use of oil within the proportions often described in the testimony and in the claims of the patent as 'critical proportions' 'amounting to a fraction of one per cent. on the ore,'* and therefore the decree of this court will be that the patent is valid as to claims Nos. 1, 2, 3, 5, 6, 7 and 12" [that is the fraction-of-one-per-cent. claims] "and that the defendant infringed these claims, but that it is *invalid as to claims 9, 10 and 11.*" [Those are the small-quantity claims.]

So the only disagreement between this court and the Supreme Court—literally the only thing concerning which there was any disagreement—was concerning the *question of law* as to whether the reduction of the oil used to a small

fraction of one per cent. constituted patentable subject matter. Your Honors held it did not; the Supreme Court differed from you only in respect to that holding. The Supreme Court agreed with your Honors as to your *finding of fact* as to the state of the art, as to where the invention, if it were an invention, resided.

Subsequently the patent went before the Court of Appeals for the Third Circuit in the Miami case, and that the court found, just as all the courts except the District Court of Montana had found, that the invention resides in the use of this extremely small, critical amount of oil. That court said, at page 134 of the pamphlet, beginning at the bottom of the page:

> " The affinity of oil for metal was known, and though old, was employed in the invention; but that this affinity in a given condition is greatest when its quantity is relatively least or that the affinity increases with the decrease of oil below a given quantity (less than one per cent.) is the *soul of the discovery*, and was wholly new."

Finally the patent has again come before the learned District Judge of Montana, and he has held that the defendant, in the use of oil in quantities of *more than one per cent.*, infringes the valid claims of the patent in suit. To our mind, the decision of the learned judge amounts to a reaffirmance of his original opinion, *including those errors in it which the Supreme Court had condemned.* Let me read briefly from the opinion below, beginning at page 210—beginning at the bottom of that page, last paragraph:

> " Ambiguity and obscurity were as much due to the extreme mechanical simplicity of the process as to the inability then and now to know and explain all its laws or principles. The tendency was to attach *prime importance* to reduction in amount of oil used, when in fact this is but a *necessary incident* (for which there are *substitutes* if not *equivalents*) to the creation of the infinitude of bubbles that do the work."

He still thinks the quantity of oil is quite immaterial.

If you will turn to page 213: The Supreme Court, as I pointed out, limited the invention to the " critical propor-

tions," and said that was the whole novelty in the subject-matter. This is what the court below said concerning "critical proportions:"

> "These 'critical proportions' are like those *known to and solved by every child with its pipe and bowl of suds.* Too little soap, the bubbles are few, small, fragile, and break quickly. Too much soap, they flow from the pipe in a torrent, are heavy, and refuse to float. The right amount of soap, 'the critical proportions,' his bubbles are large, detach readily and float high, far and for long. *So is it with the bubbles in this process.*"

The court below evidently did not find the invention in the "critical proportions," as I submit the Supreme Court did.

If you will turn to page 219, beginning just before the end of the first paragraph:

> "It seems clear neither patent nor decision undertakes to say the process *depends upon* less than one per cent of oil, or is inoperative with one percent or more of oil. It is true that in the beginning and *during the Hyde suit* the patentees inclined to so believe or at least believed better results would be obtained by a fraction of one per cent. of oil. Perhaps limited investigations and experience with few ores and oils justified the belief. Indeed, all experience to date, plaintiff's, defendant's, stranger's, demonstrates that with any ore and any efficient oil, less than one percent of oil gives better results, all circumstances considered. The 'critical proportions' referred to seem absent, in terms, from the patent, and ought not to be adversely inferred in disregard of construction in favor of the patentee where the patent is ambiguous. The patent describes oil 'considerably reduced' and refers to a 'fraction of one percent' by way of example. And though some claims limit oil to such fraction, and a limited range within it, others are for 'a small quantity' and for that reason were held invalid by the Supreme Court. *With the later knowledge of this suit it is doubted that such would be the decision now.*"

In other words, the learned judge still thinks he was right in his decision in the Hyde case in sustaining those small-quantity claims and thinks the Supreme Court was wrong in

finding them invalid! But as I said in the beginning, the decision of the Supreme Court as to the construction of this patent is the law of the land.

Now, I shall turn to the patent itself. The claims which were sustained by the Supreme Court are limited to "*a*" fraction of one per cent. The question arises, to *what* fraction of one per cent. are they limited? We say that they are limited by the decision of the Supreme Court to *that* fraction of one per cent. which is *one-half of one per cent. or less.*

The Supreme Court, in its decision, as you have already heard read, says this:

> "The patent must be confined to the results obtained by the use of oil within the *proportions often described in the testimony and in the claims of the patent as 'critical proportions'*".

So, the question arises, What are the "critical proportions" described in the specifications? The "critical" proportions described in the specifications are between one-fiftieth of one per cent. and one-half of one per cent.; that is, one-half of one per cent. or less. If your Honors will turn to page 1, line 79, of the specification, you will find this:

> "To this is added a very small proportion of oleic acid (say from 0.02 per cent. to 0.5 per cent. on the weight of ore)."

That is, from one-fiftieth of one per cent. to one-half of one per cent.

And further down in the same column, line 96, the following appears:

> "The minimum amount of oleic acid which can be used to effect the flotation of the mineral in the form of froth may be under 0.1 per cent. of the ore, but this proportion has been found suitable and economical".

In other words, in the patent the "critical" proportions are given as one-half of one per cent. or less. The preferred proportion is one-tenth of one per cent.

Now, the Supreme Court said that the claims must be limited to the "critical" proportions which were "often re-

ferred to in the testimony of the witnesses;" so I shall ask your Honors to go to the testimony of the witnesses in the Hyde case to ascertain what were the "critical" proportions which are described by those witnesses. Of course we have not the time to do it now. I have in our brief collated a number of extracts from the testimony of plaintiffs' witnesses in the Hyde case—and the Hyde case, by the way, is part of the record in this case; it has been stipulated in this case as a part of the record before your Honors. You will find that the "critical" proportions described by these witnesses were in the neighborhood of one-tenth of one per cent. They all said the largest amount of oil that had ever been used with any ore was two-tenths of one per cent.

So by referring to the testimony of the witnesses and the specifications of the patent the Supreme Court, I submit, limited the valid claims to that fraction of one per cent. which is *one-half of one per cent. or less.*

JUDGE MORROW: Does the term "critical proportions" refer to a proportion that is less than one-half of one per cent., or does it refer to some proportion beneath one-half of one per cent.—a definite proportion below that?

MR. BULL: The statements of the plaintiffs and their counsel, which I will read in a few minutes, I think will answer that question. What they said was there is a "critical" quantity; that the "critical" quantity is usually one-tenth of one per cent.; sometimes it gets as high as two-tenths of one per cent.

JUDGE MORROW: Varying with the ore?

MR. BULL: Varying with the ore. Sometimes it goes as low as one-half of one-tenth of one per cent.; but they said it never goes beyond those limits, and that those proportions were "critical"?

JUDGE MORROW: That is definite.

MR. BULL: That is definite for each ore.

JUDGE MORROW: For each ore?

MR. BULL: For each ore.

JUDGE MORROW: That is to say, that proportion that will work for a particular ore?

MR. BULL: That is right.

Such a construction, limiting the claims to one-half of one per cent. or less, was not only compelled by the record, but it

was invited by plaintiff's counsel in their brief and oral argument before the Supreme Court. Their brief before the Supreme Court, on the very first page, in the opening statement, reads as follows (I read from page 33 of our brief):

> "The distinctive feature of the invention patented is the employment of air bubbles in co-action with a *minute and critical* amount of oil in a mixture of ground ore and water, so as to produce upon the surface of the water a froth containing substantially all of the metallic particles which can be easily flowed off or removed.
>
> "This process was never used before. This result was never obtained before. The process is dependent upon the use of oil in a *minute and critical* amount and thorough aeration. If more oil is used, *you do not operate the process*, and you do not get the result. So, also, if less oil is used, the *process is not operated* and the result is not obtained. By using other and greater quantities of oil you operate a *different* process, and you obtain wholly different results. That the *critical* amount of oil characterizing the process is a *minute* amount of oil (varying slightly with different ores and different oils) is merely a fortuitous circumstance. Nevertheless, the process is dependent upon such *definite minute* amount of oil."

They made the same statement in their oral arguments. You will find quotations from their oral arguments in our brief. In answering questions which were propounded by the court—I will ask your Honors to turn to page 17 of our brief, and you will see reported there a colloquy between Mr. Justice McReynolds and Mr. Kenyon:

> "Mr. Justice McReynolds: I would like to ask you when in this process of reducing oil your invention came into existence?
>
> "Mr. Kenyon: *At about one-half of one per cent. of oil.*
>
> "Mr. Justice McReynolds: Before you got to the one-half of one per cent., did you have any invention?
>
> "Mr. Kenyon: We were passing from the region of Cattermole, which was a distinct—
>
> "Mr. Justice McReynolds: I want to know when your invention came into existence?
>
> "Mr. Kenyon: This invention was not reached, I

should say, from those figures, *until about .5—that is, one-half of one per cent. of oil—was reached.*

" MR. JUSTICE MCREYNOLDS : At one per cent. you had no invention ?

" MR. KENYON : No.

" MR. JUSTICE MCREYNOLDS : At one-half of one per cent. you did have invention ?

" MR. KENYON : It began to come. Remote, but it began to come. At .3 of one per cent. the float vastly increased. At .1 of one per cent. the float again vastly increased.

" MR. JUSTICE MCREYNOLDS : *When this float has more than one-half of one per cent. of oil it does not infringe ?*

" MR. KENYON : *It does not infringe.*"

So I say the Supreme Court in limiting these claims to the " critical proportions " often described in the testimony of the witnesses in the Hyde case and in the specifications, limited them to that fraction of one per cent., which is *one-half of one per cent. or less.*

On what theory did the court below find infringement in the use by the defendant of more than one per cent. of oil ? The theory is this : Since a larger quantity must always necessarily include a smaller amount, when the defendant uses more than one per cent. of oil, it necessarily uses a small fraction of one per cent. ; and since a small fraction of one per cent. will do the work as well as, or better than more than one per cent., all above the small fraction is useless, wasted or detrimental, and therefore should not be counted as oil in the process. That is the theory on which the learned court below found infringement in the use by the defendant of more than one per cent. of oil.

Now, I submit, may it please your Honors, that reasoning might be perfectly sound if this were a case in which the facts were that these patentees were the first to give the art oil, water and agitation. But, as a matter of fact, these patentees were not the first to do that; they were not even the first to give the art oil down to one per cent., as your Honors found in the Hyde case, and as every other court following has found. All these patentees gave the art was a small fraction of one per cent. of oil, as distinguished from one per cent. or more. Their contribution, therefore, was only the *avoidance of the*

use of larger quantities of oil. The reasoning of the lower court entirely neutralizes and wipes out the ground on which the Supreme Court held invalid the small-quantity claims. The Supreme Court said the small-quantity claims were too broad. It said to the plaintiffs : " You are not entitled to a monopoly on the use of a small quantity of oil ; that was old ; all you are entitled to is a monopoly on the use of the ' critical proportions ' which you have described and which are less than one-half of one per cent. That is what you contributed to the art ; it is all you contributed to the art ; and that is all you are entitled to."

The decision below, may it please the court, in view of the fact that defendant here is using the prior-art quantities of oil (because it was old to use as little as one per cent. of oil), amounts to saying that by the issuance of the patent in suit the public has been deprived of the right to do what it was in the habit of doing before these patentees entered the field ; and that, may it please your Honors, is a *reductio ad absurdum.*

So I say, the decision below, as it seems to us, totally neglects the theory on which the Supreme Court condemned these small-quantity claims. The Supreme Court found that the invention here was in the *avoidance* of the use of a " small quantity " and in the *adoption* of a small fraction of one per cent. And by condemning the small-quantity claims, the Supreme Court has said, as plainly as any court could say it, that the public is at liberty to use a *small quantity* of oil provided it does not use some fraction of one per cent. which is less than one-half of one per cent.

The defendant in this case, may it please the court, does not use more than one per cent. of oil because it cannot use less and get satisfactory results, or get even better results than it is getting now. It uses more than one per cent. of oil because the Supreme Court has said that it is not at liberty to use less than one-half of one per cent. ; and like every burned child it dreads the fire and therefore is using more than one per cent. of oil.

Plaintiffs' counsel in this case have figured out from the testimony that the use by the defendant of more than one per cent. of oil has cost it, in increased cost and diminished recoveries, more than a million dollars a year. It is costing defendant more than a million dollars a year to avoid in-

fringement of this patent, as it has been construed by the Supreme Court, according to the figures of plaintiffs' counsel. What the Supreme Court gave the plaintiffs is the exclusive right to save that million dollars a year in a plant such as the defendant's. Defendant is not saving that; it is not using the plaintiffs' process; it is not, we submit, infringing the patent in suit.

The defendant's oil consists of a mixture of oils. It is a mixture composed of one-fourth vegetable oil (that is, pine oil) and three-quarters mineral oil (that is, a fuel oil, and sometimes a small percentage of kerosene). My learned friends argued below that the mineral oil of this mixture was inert and useless; that it is added to the mixture as a diluent, merely to increase the volume. They referred to it being as useless in the process as milk or sawdust. Therefore they said they should take account of the mineral oil of the mixture in determining the amount of oil we used. Apparently my friends have abandoned that contention in this court, if I understand their brief. They admit now that mineral oil is not inert and useless in this process. They were compelled to admit this, because it appears by the evidence that all of plaintiff's large licensees in this country —all of whom are entitled to use as little oil as they can use, and of course every one uses as little as he can use, because the expense, even of this small quantity, runs up into very large figures in the large mills—practically all of plaintiffs' large licensees, who are at liberty to use as little oil as they can use, use a mixture of oil, composed of vegetable oil *and mineral oil*, just like that used by defendant. Practically all of plaintiff's licensees use a mixture of oils of which a *mineral* oil is one of the components. So it is perfectly obvious by their own practice that a mineral oil is not inert and useless. That is true of the standard mill practice of the Braden Copper Company, licensees; the Anaconda Copper Company, licensees; and the California-Arizona Company, also licensees. Some of them, indeed, use the identical proportion of vegetable and mineral oils which we use—that is to say, one-quarter vegetable oil and three-quarters mineral oil.

Furthermore, it is established by the proofs in this case that practically all the infringers—those who were before the

Supreme Court decision using the process without the license of the plaintiffs—that practically all of the infringers in this country used as oil a mixture of oils, composed of vegetable oil and mineral oil, just as we now use. I am referring now to the practice of the infringers before the Supreme Court decision was handed down, and when they used the smallest quantity of oil they could use. This was true of the Utah Copper Company, both at its Magna plant and its Arthur plant; it was true of the Chino Copper Company; and it was true of the Ray Consolidated Company, and others. In fact, plaintiffs' expert Greininger admits that at a plant in British Columbia, he installed and used as a steady thing a mixture of 25 per cent. vegetable oil and 75 per cent. mineral oil, which is precisely the mixture which we use. That will be found in volume 7, page 4060, x-Qs. 120 to 123. I have noted this reference to the record, because it is not in my brief, and so that it may appear in the report of my argument.

So it is perfectly evident that the mineral oil constituent of our mixture is not inert and useless. The mixture that we use is one which is commonly used and almost universally used in this country by those who are using one-tenth of one per cent. of oil, and by those who are operating under licenses from the plaintiffs.

I should further refer to the fact that plaintiffs' own witnesses, Higgins and Chapman, admit that so far from being inert and useless, mineral oil is highly useful in a mixture when employed in flotation processes. I read from page 47 of my brief. Plaintiffs' witness Higgins, by the way, is the man who made the original experiments, and knows as much about this subject as anybody in the world, I presume, and he says this concerning the use of petroleums:

> "They are *useful* in the process of the patent in suit chiefly for the purpose of preventing the coarse mineral from falling out of the froth."

That is to say, holding the mineral in the froth. Then, further on he says: that it

> "prevents showering, that is, it helps to keep the mineral from falling out of the froth.'"

Furthermore, plaintiffs' witness Chapman says, concerning petroleum :

> " I have on *many* occasions used inactive oils, particularly those like fuel oil, kerosene and stove oil, to produce a *condition of froth* in the spitz box that will maintain a steady condition of overflow. The addition of these re-agents in small quantities is *extremely useful* for the purpose, and considerably eases up the operating work."

Therefore, may it please your Honors, it is plain that the use of the mineral oil constituent of our mixture is not the use of a diluent simply to increase bulk, but that it is used for beneficial purposes in the process.

In this court the complainants have advanced a new theory. The theory they advance now is this : they say mineral oil is not a *froth-producing* oil. They say that the oil of the claims is only that oil which will produce a *froth*, and therefore the mineral oil should be excluded in the computation of the amount of oil which we use.

Now, may it please your Honors, there is absolutely no foundation, either in fact or in the patent, for such a theory as that. The fact is, the patent directly contradicts the theory. If your Honors will turn to the claims of the patent again—claim 1—you will see that it designates very particularly and clearly what is the oil of the claim. It says it is an " oily liquid having a *preferential affinity for metalliferous matter.*" The oil of that claim is such an oil as has a " *preferential affinity for metalliferous matter.*" So the question immediately arises, Do mineral oils have a " preferential affinity for metalliferous matter ? " And it is admitted, may it please your Honors, that they do. My learned adversaries admit that mineral oil, as well as vegetable oil, has a " preferential affinity for metalliferous matter." As a matter of fact, it has a greater affinity for metalliferous matter than has vegetable oil, and that is the reason why we use it in our mixture.

The claims do not say " an oily liquids producing a froth." They say " an oily liquid having a preferential affinity for metalliferous matter." And whenever you have such an oil or oily mixture, containing something which will produce a froth,

you have the "oily liquid" of the claim. So I say there is absolutely no basis for the plaintiffs' contention that the oil of the claim excludes mineral oil, since that oil has this "preferential affinity for metalliferous matter."

But is it a fact, as they allege, that mineral oils do not have any froth-producing qualities ? I submit it is not, and I shall ask leave to hand up a memorandum of references to the record on this point which I shall refer to in this part of the argument, because they are not in our brief.

In the first place, I wish to call your Honor's attention to the fact that the patentees of this patent in suit, in the very first written description of the invention describe a mineral oil as a substitute for oleic acid, the specific oil which is mentioned in the patent. If your Honors will turn to page 47 of my brief, you will find the report of the patentees to the chairman of Minerals Separation of the discovery of the invention at bar. This is the first written description of the invention. They say :

> "We may here conveniently note that *other oils* beside oleic acid may be employed in this modified recovery process, but so far as Broken Hill is concerned, oleic acid gives by far the best results." ["Broken Hill" was the ore with which they were experimenting at that time.] "*Petroleum residuum* added as emulsion, *paraffine oil alone* ["paraffine oil" is the English name for kerosene] "*paraffine oil alone*, R_3P_1 and R_1P_3 emulsions, have also been used, and *all give small proportions of float*, but do not act nearly so vigorously or efficiently *on Broken Hill ores* as plain oleic acid."

So in their very first description of the process they describe the use of a mineral oil (that is, kerosene), as the equivalent of oleic acid and capable of producing a mineralized froth, but say it does not give as good results on Broken Hill ores.

In the British patent which corresponds with the patent in suit, the complete specifications describe in the working example of the patent the use of *petrol*, which is gasolene, page 1279, line 38. They say, speaking of the pulp :

> "To this is added a very small proportion of oleic acid *or petrol or other suitable oil*".

There again, you observe, they give a mineral oil as the equivalent of oleic acid, which is the specific oil mentioned in the patent here in suit.

JUDGE HUNT: What is oleic acid?

MR. BULL: Oleic acid is what is commonly known in commerce as red oil; it is a by-product in the manufacture of candles.

JUDGE MORROW: It is an animal oil?

MR. BULL: It is an animal oil.

JUDGE MORROW: Not mineral or vegetable oil?

MR. BULL: No.

That reference to "petrol" is repeated six times in those specifications. Your Honors understand that this is the British patent which corresponds to the patent here in suit.

JUDGE MORROW: Petrol is not mentioned in this patent.

MR. BULL: No, it is not mentioned in the patent in suit, but we are only now considering the question of fact as to whether mineral oil is capable of producing a mineralized froth—mineral oils alone. The fact is, the application for the patent here in suit was filed within a month after the provisional specifications were filed in Great Britain. The provisional specifications contained exactly the same language as the specifications in the patent in suit. The complete British specifications were filed some months later, and by that time the patentees had verified the fact that mineral oils would act as well as oleic acid and they put "petrol" in, in addition to oleic acid, in the specific example.

Your Honors observe that the patent in suit opens with a reference to the prior Cattermole patent. What it says is as follows:

> "In the process described in the previous United States patent, No. 777,273, granted to A. E. Cattermole, an amount of oil varying from 4 per cent. to 6 per cent. of the weight of metalliferous matter present is agitated with an ore pulp", etc. "We have found that if the proportion of oily substance be considerably reduced—say to a fraction of one per cent. on the ore"—etc.

In other words, this patent in suit opens by saying that the use of the *oily substances of the Cattermole patent*, if reduced in quantity, will produce the desired result. That carries us directly to the Cattermole patent to ascertain what are the "oily substances" mentioned in that patent. The Cattermole

patent is found in Volume 4, page 2138. At line 91, describing the oils which may be used, the patent says:

> "The 'oil' used may be animal, vegetable or *mineral* oil" [the three kingdoms of oil] "or *mixtures of these* or such coal or wood tar products or other substances which exercise, like oils, a preferential physical affinity for metallic mineral matter as distinguished from gangue."

So the Cattermole patent, to which reference is directly made in the patent in suit, and to which the reader is referred to ascertain what character of oils may be used—that patent tells you that *mineral* oils, and *mixtures* of vegetable and mineral oils, are included among the class of oils which may be used for this purpose.

Plaintiff's witness, Mr. Higgins, to whom I have already referred as the gentleman who made the original experiments which resulted in the discovery of this process, said:

JUDGE MORROW: Mr. Bull, is there a difference in the affinity of oils for the metalliferous content or the pulp?

MR. BULL: Yes, your Honor.

JUDGE MORROW: I mean as between vegetable and animal or mineral.

MR. BULL: They differ between themselves; that is to say, some mineral oils have a greater affinity and some have less affinity for metalliferous matter; they have different affinities for different metalliferous matters. So, also, they have more or less frothing properties. It is the same with vegetable oils. It is the same with animal oils. There are no sharp lines. There is a gradual gradation. You will find that a certain oil has a greater preferential affinity than some other oils; that another has a greater froth-making capacity. That is the reason why it appears all through these records and through all of the tests, that they have to "cut-and-try" in this process; that is to say, you cannot, because one mixture of oils will work well at one place, conclude it will work equally well at some other place. As these patentees said in their first description of invention: with Broken Hill ores mineral oil does not work as well as oelic acid, but still it *forms a froth;* and they intimate that it may work as well as oleic acid with other ores.

Plaintiff's witness, Higgins, in Volume 4, page 1811, said,

when asked what other oils he used besides oleic acid, with the result of producing froth :

" Q. 110. What other oils? A. I have obtained satisfactory results by the use of *petrol*" [gasolene] " certain portions of the distillate of *crude petroleum*, such as *cosmos* oil" [which is another petroleum] " vegetable oils, such as palm oil, cottonseed oil, linseed oil, and animal oils, such as lard oil, and oil squeezed from beef fat." [All kinds of oils ; the three kingdoms of oils : animal, vegetable and mineral.]

" Q. 111. Have you been successful in the use of eucalyptus oil? A. Yes.

" Q. 112. Is the petrol to which you refer the distillation product of petroleum, sometimes known as 'gasolene'? A. The petrol I refer to is one of the lightest constituents of crude petroleum. I do not know whether gasolene is the same material.

" Q. 113. The petrol you refer to is the distillation product commonly used in internal combustion engines, such as automobile engines, is it not? A. Yes. It is known as .680 spirit.

" Q. 114. Is the 'paraffine' referred to in Higgins' report, March 16, 1905, the same as lighting oil or kerosene? A. Yes.

" Q. 117. Can you state what the smallest quantity is of eucalyptus oil that will produce a froth, operating upon, say, some one of the Broken Hill ores with which you have experimented? A. The smallest quantity of eucalyptus which I have found in my experiments with Broken Hill ore to give a satisfactory concentration as a froth, is half a pound to the ton of ore.

" Q. 118. Would you obtain equally good results on that same ore using one-half pound of *Cosmos* oil?"— [That is, mineral oil.] " A. Speaking from memory, I believe the results on *Cosmos* oil may have been a little lower when such a quantity of oil was used.

" Q. 119. Will *Cosmos* oil in any quantity give as good a recovery as eucalyptus oil? A. *Yes, I think so.*

" Q. 120. You would have to use more of the *Cosmos* oil than eucalyptus oil? A. *I am not certain that I should do so.* I have not made comparative experiments with these two oils, and it is possible that the same results might be obtained in *different periods of time for the agitation*" [That is, agitation, longer or shorter].

" Q. 121. What is *Cosmos* oil ; that is, what is its origin and what is it used for? A. It is *petroleum distillate,* sold for lubricating purposes.

" Q. 122. Is it what is sometimes called cylinder oil?

"A. I do not know. I think it is more in the nature of a valve oil.

"Q. 123. Is the Cosmos oil the Standard Oil Company's Cosmos oil?

"A. Yes, the samples were obtained from their London firm, the Anglo-American Oil Company."

So plaintiffs' own witnesses admit that mineral oil alone will produce a froth and is useful in that process.

JUDGE MORROW: The production of froth, and the affinity for metalliferous contents of the ore differ?

MR. BULL: Yes.

JUDGE MORROW: They are not the same?

MR. BULL: There are oils that will produce a froth that have no affinity whatsoever, and of course cannot be used. What you need is both. You must have frothing, and you must have affinity.

JUDGE MORROW: If oil produces froth, and has an affinity for metal, that is the best oil?

MR. BULL: Yes; or a mixture of oils which contain those two qualities, because they almost all use mixtures. A mixture that contains those two qualities properly balanced is the best oil for that particular ore.

Dr. Sadtler, defendant's witness, also testified concerning kerosene. I shall not stop to read what he said, because I see my time is getting very short. You will find it quoted in my memorandum, which I have handed up. He states that some kerosenes won't raise a froth. In his experience, three out of four kerosenes will produce froth, and one kerosene out of four will not produce froth.

Defendant's witness Janney made a series of full mill tests, of 24 hours each, using as oil a mixture such as the defendant uses—that is, one-quarter vegetable and three-quarters mineral oil—or a proportion somewhat like that—and obtained certain results. Then he used alone the vegetable-oil constituent of that mixture and obtained certain results. Then he used alone the mineral-oil constituent of that mixture and obtained certain results. The results of these tests shows that the mineral-oil constituent of the mixture used alone gave as high recoveries as did the vegetable-oil constituent of the mixture used alone, but when the two oils were used together, as we use them, he obtained higher recoveries than by the use of either of the separate constituents of the mixture.

Defendant's witness Wicks describes what happened in his plant employing a mixture of vegetable and mineral oils like that employed by the defendant, where by some fault of the machinery the supply of mineral oil was shut off. He said the froth immediately disappeared, and he searched around to find the cause. That was the first knowledge he had of the fact that something had gone wrong. He found all that had gone wrong was that the supply of mineral oil had been shut off.

Defendant's witness Punchon described similar occurrences at another mill.

So we say there is no justification for the present contention of the plaintiffs that mineral oils have no frothing capacity. What we use is a mixture in which we obtain the desired percentage of frothing quality combined with the highest possible affinity for metalliferous matter.*

* After the argument certain experiments were made in Court by plaintiffs in *bar-mixers* for the purpose of proving that the mineral-oil constituent of defendant's mixture when used alone will not produce a froth with defendant's ore. These were criticised by us because the volume treated in a bar-mixer is so small and the depth of liquid so insignificant that the foaming qualities of the contents is very largely masked and affords no fair indication of what happens in commercial machines.

In the first bar-mixer experiment (called No. 6) 0.1% of kerosene alone was added to defendant's ore. After agitation the Court observed that an *excellent froth* was produced. There then was added to what was already in the bar-mixer, 0.1% of pine oil; and after agitation the Court observed that the *same froth* as before was produced, but its amount was somewhat increased. This experiment completety disproves plaintiffs' contention that kerosene alone will not produce a froth, and will not in a mixture contribute to the production of froth.

In the second bar-mixer experiment (called No. 7) there was added to defendant's ore a mixture of Jones' fuel oil and kerosene in the proportion in which these oils are used in defendant's mixture, and in an amount equivalent to that present in defendant's machines, so there was in the bar-mixer the entire mineral-oil constituent of defendant's mixture. After agitation the Court observed that an *excellent and voluminous froth* was produced. This experiment completely disproves plaintiffs' contention that the mineral-oil constituent of defendant's mixture does not produce a froth with defendant's ore, and completely establishes what we offered to show (but were not permitted to show) that in our commercial machine (the Janney machine) the mineral-oil constituent of defendant's mixture will produce voluminous froth with defendant's ore. Finally, there was added to what was already in the bar-mixer, 0.2% of pine-oil, which is the amount present in defendant's mixtnre, and after agitation the Court observed that the *same froth* as before was produced, but the amount was somewhat increased.

I shall devote my remaining few minutes to discussing the disclaimer which was filed after the decision of the Supreme Court was handed down.

We contend, may it please the court, that the plaintiffs have no right to maintain this suit because they have—to quote the language of the statute—" unreasonably neglected

In the third bar-mixer experiment (called No. 8) 25% of kerosene was added to defendant's ore, and after agitation the Court observed that an *excellent and voluminous froth* was produced. Subsequently, there was added to what was already in the bar-mixer 0.1% of pine-oil; and after agitation the Court observed that the *same froth* as before was produced, but its amount was somewhat increased. The froths produced in this experiment did not differ from the froths produced in the other experiments, except in that they were more oily in appearance—as they must necessarily be, owing to the fact that a larger proportion of oil was used. This experiment, therefore, disproves the contention of plaintiff's witnesses that a large percentage of kerosene will not produce a froth, and it verified the statements of defendant's witnesses that it will produce a froth.

I may say a word here concerning the experiments which defendant made at the same time: After agitating defendant's ore in a Gabbitt mixer with 0.2% of pine-tar oil, and producing a froth, defendant then added to what was already in the machine, enough of the same oil to bring the quantity up to 1.6% on the ore, and the Court observed that after agitation the *same froth* as before was produced, but in larger quantity. An analysis of this froth is in the record (Deft.'s Exh. 304, Test No. 36, Vol. IX., p. 5543), which shows that the zinc content was raised from 14.7% to 33.90%, and the gangue content ("Ins.") was reduced from 67.0% to 31.20%. The test itself is described, Vol. I., p. 3353, Qs. 150 to 157. Defendant offered then to double the quantity of the same oil, making it 3.2% on the ore, but was not permitted to do so. This experiment proves that but for the very limited supply of vegetable oils obtainable and their relatively high cost, defendant could perfectly well use a straight oil in quantities above one per cent., instead of using a mixture composed largely of mineral oils, which are relatively cheap and the supply of which is unlimited. This experiment also casts a weird light on statements made by the plaintiffs to the Supreme Court which are quoted in our brief.

The second experiment performed by defendant consisted in agitating defendant's ore with defendant's oil mixture in a miniature of defendant's commercial machine (the Janney machine). The contents of the machine were, therefore, the same as those in the second stage of the second bar-mixer experiment above referred to. The amount of froth produced in the Janney machine was many times as great as that produced in the bar-mixer with the same ore and oil present, thus demonstrating our contention that bar-mixer experiments give no fair indications of the froth-producing capacity of an oil under commercial conditions, and explaining why we wished to repeat in the Janney machine the first stage of the second bar-mixer experiment.

or delayed" to file a suitable disclaimer as to those claims of the patent which were held invalid by the Supreme Court; or, in other words, to those claims I have called the "small-quantity claims."

The patent, when it was before the Supreme Court, was good in part and bad in part. It was good in so far as the fraction-of-one-per-cent. claims were concerned, construed as the Supreme Court has construed them. It was bad in so far as the small-quantity claims were concerned.

At common law one could not maintain a suit at all on a patent which was good in part and bad in part. Such a patent was wholly bad. That is the way the law stood in this country until 1837. In the year 1837 Congress passed what are known as the disclaimer statutes, to mitigate the rigors of the common law. By those statutes Congress said that one whose patent is in the condition of plaintiffs' patent in this case, in which there are valid claims and invalid claims—good parts and bad parts—where the defect arises from the fact that the patentee claims too much—where the defect is an overclaim—the patentee may correct it by merely filing a paper in the patent office which is called a disclaimer, by which he relinquishes his claim to that part which he has claimed without right; and that if he does not unreasonably neglect or delay to file such a disclaimer, he may maintain a suit—something he could not do before—on the patent while it is good in part and bad in part. The two disclaimer sections are 4917 and 4922. I think it is necessary only to read Section 4922, which will be found at page 72 of my brief.

> "SEC. 4922. Whenever, through inadvertence, accident or mistake, and without any willful default, or intent to defraud or mislead the public, a patentee has, in his specification, claimed to be the original and first inventor or discoverer of any material or substantial part of the thing patented, of which he was not the original and first inventor or discoverer, every such patentee, his executors, administrators and assigns, whether of the whole or any sectional interest in the patent, may maintain a suit at law or in equity, for the infringement of any part thereof, which was *bona fide* his own, if it is a material and substantial part of the thing patented, and definitely distinguishable from the parts claimed without right, notwithstanding the specifications may

> embrace more than that of which the patentee was the first inventor or discoverer. But in every such case in which a judgment or decree shall be rendered for the plaintiff, no costs shall be recovered unless the proper disclaimer has been entered at the Patent Office before the commencement of the suit. *But no patentee shall be entitled to the benefits of this section if he has unreasonably neglected or delayed to enter a disclaimer.*"

What are the benefits of that section ? The benefits of the section are that one may maintain a suit on a patent which is good in part and bad in part, something which could not be done at common-law. But he loses that right if he "unreasonably neglects or delays to file a disclaimer."

We say that the plaintiffs in this case have unreasonably neglected or delayed to file a disclaimer, and that they have thereby lost their rights to maintain a suit on this patent, which is still, we say, good in part and bad in part. Because, we say, the disclaimer which they filed is not a disclaimer in fact ; it is a disclaimer in form only, because it does not cancel the overclaim ; it is therefore a nullity ; and therefore no disclaimer in contemplation of law has been filed.

What the plaintiffs might legitimately have done after the Supreme Court declared the small-quantity claims invalid, was to file a disclaimer erasing those claims from the patent. They did not do that. They might, perhaps, have filed a disclaimer limiting them to a small fraction of one per cent., as the other claims were limited. They did not do that. What they did was to file a paper called a disclaimer, the essential part of which reads as follows—it is printed on the back of the patent :

> " Your petitioner, therefore, for the purpose of complying with the requirements of the law in such case made and provided, and of disclaiming those parts of the thing patented which your petitioner does not choose to claim or hold by virtue of said Letters Patent No. 835,120, does hereby disclaim from claims 9, 10 and 11 of said Letters Patent No. 835,120, any process of concentrating powdered ores *excepting where the results obtained are the results obtained by the use of oil in a quantity amounting to a fraction of one per cent. on the ore.*"

What does that mean? They tell us in their brief what it means. At page 51 of the supplemental brief, they say:

> "Thus claim 9, since the entering of the disclaimer, is, in contemplation of law, only for the process of concentrating powdered ores, which consists in separating the mineral from the gangue by coating the mineral with oil in water containing a *small quantity* of oil" [you see "small quantity" is still in there] "agitating the mixture to form a froth, and separating the froth, *when the results obtained are those obtained by the use of oil in a quantity amounting to a fraction of one per cent. on the ore.*"

In other words, what their claim now means, in plain English, is this: "We still claim the use of *more* than one per cent. of oil, where the results obtained are the same as if *less* than one per cent. of oil were used."

Those claims are still as broad as they were when they were condemned by the Supreme Court, because claim 9 was from the beginning limited to the production of the froth of the patent in terms. Claim 9 differed from claim 1, as I show by parallel columns in my brief, only in respect of the fact that the former specifies a "fraction of one per cent." and the latter specifies a "small quantity." And these claims 9, 10 and 11 are still for a "small quantity" of oil. They still claim a "small quantity" of oil, when the results produced are the same as if a fraction of one per cent. were used.

Plaintiffs justify by saying that the language of the disclaimer conforms with the *words* of the Supreme Court decision; BUT IT DOES NOT. What the Supreme Court said was that the patent must be confined to the "*results obtained by the use of oil within the critical proportions.*" What the disclaimer says is that the claims are confined to results *which are like those obtained by the use of oil within the critical proportions*—WHICH IS A VERY DIFFERENT THING.

UNITED STATES CIRCUIT COURT OF APPEALS FOR THE NINTH CIRCUIT.

BUTTE AND SUPERIOR MINING COMPANY,
DEFENDANT-APPELLANT,
v.
MINERALS SEPARATION, LIMITED ET AL.,
PLAINTIFFS-APPELLEES.

CLOSING ARGUMENT OF FREDERICK P. FISH

FOR DEFENDANT-APPELLANT.

May it please the Court, it seems to us that the decision of the Supreme Court, which is, of course, controlling on most phases of this situation, is very clear, so clear that its meaning can not be clouded even by the great ingenuity of counsel. But it is fortunate that there is one thing in that decision as to which there can be no question whatever and that stands as a firm basis for the discussion between these contesting litigants, and that is this, that Claims 9, 10 and 11 of the patent in suit were declared invalid. The other claims in issue were sustained, but those claims were declared to be invalid. And why? It was not for any vagueness; it was not because of their form or for any artificial expression that the Court did not like. It was because these claims were not for the specific thing that the Court found to be new with these inventors, namely, the use in a process of this character of the "critical proportions" of oil, which those inventors, as the Supreme Court was persuaded, had discovered to lead to most remarkable results. That limitation was not in those claims; hence Claims 9, 10 and 11 were invalid. And yet those claims,

referring to the process aptly and in all other respects, differed from the claims that were sustained merely because of the use of the phrase "a small quantity" instead of the corresponding phrases of the other claims, which some in terms and all as the Court construed them were specific to the minute and critical proportion of oil shown by the testimony and asserted in the patent and in argument to be essential. Now, of course, that phrase "a small quantity" was apt for one-tenth of one per cent; it was apt for five-tenths of one per cent. There is no doubt about that. But they were also apt for somewhat larger quantities and the Court said that those claims were bad because the invention did not extend one iota beyond the specific "critical proportions" of oil, which "critical proportions" were not properly defined by "a small quantity", which might be argued to include a quantity not large, but beyond this critical amount. The patent was not valid for "a small quantity" if beyond this critical amount.

I shall come back to the patent later, but now ask your Honors to note the way in which the Supreme Court deals with the question as to what actually was this "critical proportion" of oil to which the patent is limited. It does not say that that somewhat vague phrase "a fraction of one per cent", which appears in some of the claims, was a sufficient indication of the scope of the patent. What fraction of one per cent is intended? It finds that "the critical proportions" of oil to which the patent is limited (so that Claims 9, 10 and 11 are invalid because not being restricted to those "critical proportions") are those "*often described in the testimony* and in the *claims of the patent* as 'critical proportions' amounting to a fraction of one per cent on the ore". It plainly indicates that the proportions "often described in the testimony" and the proportions which are referred in some of the claims as "amounting to a fraction of one per cent on the ore" are one and the same. It follows that the "fraction of one per cent" to which the patent is limited is not every fraction, however large, but only that particular range of small fractions of one

per cent "often described in the testimony" with perhaps the very large expansion of those fractions named as extreme limits in the specification and some of the sustained claims (from two one-hundredths of one per cent to five-tenths of one per cent).

What was the "testimony" to which the Court referred?

Your Honors will bear in mind all through the consideration of this case that the "critical proportion" of oil, in the process as practiced commercially, was absolutely fixed in the testimony in the case before the Supreme Court, as from one pound of oil to the ton of ore (which is five-hundredths of one per cent) to four pounds per ton (which is two-tenths of one per cent). All the plaintiffs' witnesses, including the plaintiffs' engineers and the inventors themselves, testified that those were the limits in practical operation. There was no dissent from Mr. Kenyon's proposition to the Supreme Court that the invention was not present if one per cent of oil was used; that the invention only began to appear, when as little as five-tenths of one per cent was used; that it was first really present when three and two-tenths of one per cent was used and continued down to the use of two one-hundredths of one per cent. And the testimony was also clear to the effect that those were the limits in the case of all known oils. There was never in the Hyde record any thought of any discrimination between mineral, vegetable and animal oils, between petroleum oils and pine oil, for example, any more than there was any thought of such discrimination in the patent; for that patent is void, *ab initio*, if there is anything in the argument of Mr. Kenyon to which your Honors have listened, supported by Mr. Garrison, to the effect that petroleum products like fuel oil and kerosene are not oils of the patent, that certain oils only of those which have a "preferential affinity to metalliferous matter" are to be taken into account as useful in the patented process. Can a patent stand which says that, to practice the invention, you may use all oils that have a preferential affinity for metals as well as fatty acids and other substances, when

as a matter of fact, as the plaintiffs now contend, only *certain* of such oils can be used and you must hunt through the entire list of such oils, fatty acids and other substances to find which oils will do the trick, the patent itself giving no hint as to how you are to find such oils? Of course not. That would be no such disclosure as the patent law requires.

There was a similar situation in the case of the Incandescent Lamp Patent, 159 U. S. 465, where the patent was declared invalid because the claim was for a lamp filament of "fibrous or textile material", and the patentees did not tell how to find such materials or to recognize them when found. The patent, while specifically mentioning "paper", practically directed the reader to hunt through the universe and if he contrived to find fibrous or textile material that was useful for a filament, the patentee proposed to take away from him the night to use it. Here they do mention oleic acid, which the defendant does not use, as a mere illustration of an oily substance. But it is an illustration only. What the plaintiff now contends is, that many oils are not useful for a flotation process and that the fuel oil or kerosene which we use is not an oil of the patented process at all. I should judge from their talk that plaintiffs would contend that there are comparatively few oils which one can use in such a process. If that is so, the patent is fatally defective, for it does not give the information necessary to enable the public to know what oils to use and what not to use.

But the fact is that this is an after thought. The patent is clear. It says that one may use any "oil, fatty acid or other substance that has a preferential affinity for metalliferous matter"; and the plaintiffs must be held to that. When, therefore, we use fuel oil or kerosene, among other oils, we are using exactly what the patent tells us to use and our rights in this controversy are to be determined in view of the fact that we use *far beyond* the "critical proportions" of oil, not oleic acid, but other oils, whether pine oil, fuel oil, kerosene or anything else. There is no basis for the plaintiffs' argument that some

oils are more " frothing " than others and that the patent deals only with frothing oils. The patent and the Hyde record say nothing on this subject and the contention that a part of our oil is to be ignored because it does not happen to be what the plaintiffs call a " frothing oil " (although it does make a froth and is commonly used in frothing processes as the record and our brief abundantly show) is entirely unfounded.

In studying the record your Honors will be interested to find the innumerable combinations of oils and fatty acids that have been employed for the separation of minerals by flotation in different mining operations. The fact is that every ore must be studied and experiments made to determine what oil or combination of oils is best for use with that ore; and engineers differ in their views. Some engineers prefer a mineral, some a vegetable or other oil and other engineers prefer specific combinations of oils that appeal to them.

There is nothing in the proposition that fuel oils, kerosene and other mineral oils which have been so generally used in frothing processes as the record shows, are not among the precise oils which the patent says are to be employed in carrying out the alleged invention. In getting up his oil formula, every engineer selects his ingredients in view of the particular problem before him. It may well be that some oils make more of a froth than others. It is equally true that some oils have a greater preferential affinity for metals than others. Each engineer makes that combination of oils that will secure the frothing and utilize the preferential affinity to best advantage in dealing with the particular ore which is to be treated; and, of course, in each locality the question of the oil that can be obtained and its price in that locality are of the utmost importance and must be considered by the engineer in making his combination.

I will go back a little, if your Honors please. It is rather interesting to glance, even at this late stage of the litigation, at the state of the art. The patent, of course, recognizes that everybody has known — it has been conceded here by counsel

that everybody has known it for a great many years — this matter of the preferential affinity of oil, of all oils for that matter, for minerals. I will not waste time showing that to be true, because it is conceded. It had also been as definitely known, long prior to the invention of the patent in suit, that one could generate bubbles of gas or air in a pulp made up of ore, oil and water, and that the oil would coat the mineral particles and the bubbles attach themselves to the oil coated mineral particles and carry them to the surface of the pulp. That had been known for a great many years. Until the last very few years, however, this knowledge had not been utilized commercially to a very large extent, but it had been known.

These three patentees, Picard, Sulman and Ballot, were associated in a great engineering concern in London and had been working on this sort of a mineral separation problem for years, agitating ore, oil and water in a pulp. The way this invention happened to be made was that these three men, working on a method devised by Cattermole, told Mr. Higgins to try a lot of experiments, to work to the limit in finding out exact facts, among other things to study the action with such a pulp when less and less quantities of oil were used down to the "vanishing point". He did what they told him to do and made what they now say was the remarkable discovery that when only a minute quantity of oil was used, from one pound to the ton of ore (.05 per cent) to four pounds to the ton (.2 per cent), according to the testimony, or from .02 to .5 per cent, according to the wide range stated in the patent, a marvelous new process had been discovered.

Now, Mr. Picard and Mr. Sulman had known for many years the other fundamental important thing, namely, the utility and efficiency of bubbles of air or other gas as an agency for lifting oiled metallic particles to the top of a pulp made up of ore, oil and water. Mr. Sulman says on page 1603, Vol. 4 of the record, in answer to questions of his counsel: —

"*Q.* 3. Will you please state when you first learned of

the use of oil or fatty matter as a means of separating part of the constituents of an ore by flotation?

A. I first learned of the use of oil to separate particles of mineral of an ore by flotation due to the buoyancy of oil in about June, 1894.

Q. 4. Will you state when you first learned of the use of oil or fatty matter in connection with the supplemental action of a gas as a means of floating parts of the constituents of an ore, the ore being suspended in water as a pulp?" (That, may it please the Court, is a pretty good description of the fundamentals of this process.)

"*A.* I first learned of the concomitant use of a gas with an oily substance and as an essential concomitant to flotation about July, 1903."

The invention of the patent in suit was made in the Spring of 1905.

" In this answer I do not refer to the more or less accidental presence of some air bubbles in the Elmore oil buoyancy process",—that is there were bubbles also there —" but prior to this I had noticed the tendency of oiled mineral to float at a water surface or when brought into contact with bubbles of air during the prosecution of researches into the Cattermole process."

On the next page, 1604, the question was asked him: —

"*Q.* 6. I understand from your answer to question 4 that about July, 1903, you had learned of the intentional use of a gas with an oily substance to produce flotation. If I am correct in this will you describe the process so referred to?

"*A.* A pulp of the ore containing the mineral which it was desired to separate was mixed with a small quantity of oil insufficient to float the mineral by the buoyancy of the oil alone and mixed sufficiently to ensure the attachment of small quantities of oil to the mineral."

This is what he knew two years before the date of the invention of the patent in suit.

> "A gas was then liberated in or generated in the pulp so prepared and it was found that such gas had a tendency to attach itself to the oiled particles. If air were used this was liberated by blowing a stream of bubbles through the mixture in several ways, and if a gas other than air were employed this was generated in the liquor by chemical reactions or by electrolysis."

May it please the Court, such were the bases of this process which is patented in the patent in suit, and it shows that the Supreme Court was right when it followed this Court in saying that there had been so much done in the study of the relations and actions of air, gas, bubbles, water and oil, in the separation of minerals, that the step from the prior art to the invention of the patent in suit was "not a long one", wherefore the patentee must be limited to the thing which they said so emphatically was the secret of the whole invention, that is, the use of only the critical amount of oil, at the outside not over five-tenths of one per cent of the weight of ore. In the record (Vol. IX, p. 5306), your Honors will find that Mr. Kenyon asserted to the Supreme Court that in the Hyde case the invention is not present when "as much as one per cent of oil" is used; that it is just foreshadowed when five-tenths of one per cent is used and is not really present until you get down to three-tenths of one per cent. He stated emphatically that there is no infringement if "more than one-half of one per cent of oil" is used.

Your Honors will therefore bear in mind that there was nothing new in the bringing together of ore, bubbles, oil and water for flotation purposes; that the "preferential affinity of oil for metalliferous matter" and the efficacy of bubbles to promote flotation, were well known. Everything was known except the value of using *only* the "critical" amount of oil and the unforeseen results which followed from that use. In the

Cattermole process with which these inventors had been experimenting for many years, it was the same old situation. Cattermole used oil and in "small quantity", but not in the "critical proportions" of the patent in suit. He and Sulman and Picard in practicing his method were not seeking to get flotation, although the record shows that they always had "froth", but by proper manipulation and by agitation, which they themselves show was sometimes just as great as the agitation under this patented process and which was performed by just the same apparatus, namely, the Gabbet mixer — they undertook to bring these elements, the oil, air, water and mineral, into such relations that the conjoint effect brought about by their manipulation of them would be the formation of grains of metalliferous matter; that is, the oil would smear the metalliferous particles and would coagulate the grains together, in which case they would be heavy and would drop so that they could be taken out at the bottom of the tank instead of at the top as is done with the patented Flotation Process. They finally introduced the Cattermole process into commercial use in Australia, but they hoped to improve it. Therefore they started in to experiment in a scientific fashion, utilizing their laboratory resources and their great experience with the view of determining all the conditions and all the relations of the elements with which they were working. They put up to Mr. Higgins seven lines of investigation, one of which was to try all quantities of oil down to the "vanishing point" as they say.

There is one thing I ought to say here in dealing with the Cattermole actions. There had been froth from start to finish in the Cattermole process. The witnesses repeatedly talk about that froth as appearing in their experiments and work.

Apparently, the great problem given to Mr. Higgins was to study and develop the influence of the various amounts of oil that might be used in this Cattermole granulation process which, as I have stated, always produced some froth. The results of his experiments are on page 1109 of Volume 3 of the record. He started with a normal amount of oil such as he

had used in his Cattermole experiments, say, three per cent of the weight of the ore, and then used less and less oil, varying his conditions somewhat. He always had froth, or "float", as he sometimes called it. He worked with oleic acid as his oily material, that being the type of oil which he had hit upon for his Cattermole work. When he used three per cent of oleic acid, there was very little float; but there was always some. When he had 1.5 per cent, there was rather more float. When he got down to .32 per cent of oil, then the "float vastly increased". When he went down to .10 per cent on ore, the float again "vastly increased". He had then realized the present invention, as Mr. Kenyon told the Supreme Court. That is about the limit of advantage. As a matter of fact, he went down to .002 of one per cent, but that is a "little worse".

At this point I would like to read from the report that goes with that Table and say a word or two about it. This Table shows the genesis of the invention which was a pure modification of the regular Cattermole practice. There is no indication that Higgins did anything new in this work except to vary the percentage of oil. In all other particulars, including agitation, he did exactly what he had always done during the whole period of the Cattermole experiments. He says, Volume 3, page 1108: —

> "The effect of diminishing the percentage of oleic acid is to alter the type of oiling; the higher percentages producing granules and the lower ones froth. 6 per cent of oleic acid on the mineral"— which in this particular mineral would be 3 per cent on the ore —"is sufficient to form good granules"— How about froth? —"*without much froth*". The froth is there. "This froth consists of insufficiently oiled mineral mixed with large quantities of air." That air was undoubtedly in the form of bubbles because of the agitation with the Gabbett mixer. "As this percentage of oleic acid is decreased, the time for clean up of the sands is increased and more froth is formed. 0.62 per

> cent oleic acid on the mineral is insufficient"—that is, .31 or .32 per cent on the ore —"to form any granules", that is, the point is reached where the quantity of oil is not enough to bring the oiled particles together in a bunch, where granulation stops. "Nearly the whole of the mineral comes to the surface, on stopping the cone, as froth."

We have then, in the series of experiments which resulted in the alleged invention of the patent in suit, "froth" or "float" developed at every stage whether three per cent or one-tenth per cent of oil was used. The plaintiffs contended in the Hyde case and now contend that the "froth" developed when the minute quantity of oil was used was an utterly different thing from other froths. Can anything be more absurd than such a proposition? Is it not certain that the froth was the same in character throughout the range, differing only as was inevitable because of the fact that different quantities of oil were used in the different experiments? And is it not clear that this Court in its former decision was right in holding that this froth which Higgins got, whether he used three per cent of oil or one-half of one per cent, was the froth of Froment, of Kirby and of Everson? I respectfully submit on this record that those froths were all essentially the same, differing from the others in each case only as a special quantity or kind of oil or the special degree of agitation employed in that case caused them to differ from the others. The underlying structure and character of the froth must necessarily always have been the same.

The Supreme Court expresses no difference with this Court on this point. Of course, in some instances there was more oil and in those cases there were all the incidental characteristics that arose from the presence of more oil; in some instances more agitation with the resulting difference due to the degree of agitation. Today our froth is like the froth of plaintiffs' patent or that produced by the plaintiffs' licensees when they use minute quantities of oil exactly (and in no other sense) as it is

like the froth of the prior art; but our froth is oilier than the patent calls for, oilier than is used by the plaintiffs' licensees and, being an oilier froth, undoubtedly has every single incidental difference which results from the use of more oil. Some of the froths of the prior art were still oilier and had characteristics based upon that fact. Fundamentally, however, all froths brought about by the agitation of ore, oil and water, with the inevitable development of air bubbles that accompanies that agitation, must be the same in character and in underlying organization. But for the purpose of this case it is the fact, so clearly and definitely settled by the decision of the Supreme Court that there can be no dispute about it, that over and beyond its fundamental character and properties, the froth produced when one-tenth of one per cent of oil is used differs from the froth produced when over five-tenths of one per cent of oil is used in essential particulars, due to the use of the critical proportion of oil, and necessarily incidental to that use, which the Supreme Court found to give character to the plaintiffs' invention, so that no one using more than five-tenths of one per cent of oil has what the Supreme Court found to be the contribution of the patentees to the art.

The froth produced by the Cattermole process, while generally speaking the same as that of the patent in suit in that it was brought about by the agitation of oil, air, ore and water was, as the Supreme Court has settled, different in that the special incidental qualities that followed from the use, in the patented process, of only the "critical proportion" of oil, a quantity not sufficient to granulate as Cattermole wished to do, involved results which the Supreme Court found to be of large importance.

So with the froths of the prior art,— Froment, Kirby, Everson and the rest — which were exhibited to this Court at the other hearing and to the Supreme Court. They were the same froths, generally speaking, but each had the characteristics inevitably imposed by the use of some particular propor-

tion of oil. The Supreme Court had those froths in mind in finding that the step taken by these patentees, namely, the use of the "critical proportion" of oil to which the patent is limited "was not a long one". Mr. Kenyon told the Supreme Court that he could not distinguish these froths of the prior art from the froth of the patent; but the Court accepted his further statement that the mill man knew the difference because when the critical proportion of oil was used great results followed.

Now, our froth is beyond question in the class of those prior art froths under the classification established by the Supreme Court, because since the decision in the Hyde case we have used, not the "critical proportions" of oil but over one-half of one per cent, in fact, generally of late years over one per cent of oil. If our froth as produced since early in 1917 had been exhibited before the Supreme Court, plaintiffs would have been forced to say that it was a froth of the prior art even if one could not so conclude merely from looking at it. The Supreme Court accepted their argument and determined in the clearest possible fashion that these patentees made a perfectly definite, specific, clean-cut discovery that when the proportion of oil used gets near to the "vanishing point", you get the maximum of that froth. That is the discovery; that is the thing they patented; that is what the Supreme Court has directed the courts of the land to secure to the plaintiff. The patent is not for "froth", but for a process, limited to the use of oil, in the defined "critical proportions".

Neither in the patent nor in that whole Hyde record, upon which the finding of the Supreme Court was based, will your Honors see one suggestion that in practising the invention we have to consider special oils or oily substances; that fuel oil or kerosene is less effective or pine oil more effective or anything of the sort. The patent and the Hyde record, raise no question, make no requirement as to the kind of oil that is to be used except that the oil must have a "preferential affinity for metalliferous matter", which fuel oil and kerosene certainly have —

no one denies that. It does not necessarily follow that there are not some oils somewhere that are of such a peculiar character that they will work in the process better or worse than others, even if they have an affinity for minerals. But oils as a class have the required preferential affinity and therefore the use of any such oil is contemplated. And the patent sets forth that with every metal and with every new condition we have to experiment to find exactly how to apply the process. We must experiment and with oils as with everything else. Oleic acid is apparently no longer used. Fuel oil and kerosene and other petroleum products are used in a large number of plants. When your Honors come to read the record, you will be interested to find the indefinite number of combinations and permutations of oils that have been tried and are today being tried to meet different conditions. One witness testified to trying about a thousand experiments in different combinations of oils. And, may it please the Court, when engineers deal with these combinations, what is it they are after? Is it merely to try and get a froth? Of course not. To merely coat minerals? Of course not. It is to try to get a process that they can use successfully on the ore with which they are dealing. And they compromise on every feature of the process. They compromise on the proportion of the water and of the acid and of the oil; they compromise on the kind of oil or oils to be used; they compromise on the quantity of oil to get the best possible average result. It goes without saying that we cannot have a froth unless we have something to make the froth, unless the oil will froth. But an oil that froths may be one that will not smear the mineral properly and, on the other hand, it may be that there are some oils that will smear minerals properly, but will not give the highest or best froth. What are we told to do by this patent? Is it not this and this only? To take this large class of oils that have a preferential affinity for minerals and experiment and select from them intelligently, as practical men do, and we shall have no difficulty in finding exactly what we need for any par-

ticular problem, provided we use only the "critical proportion" of the oil.

The Hyde record shows that the plaintiffs and their licensees were very careful always to come within these "critical proportions". They used from a minimum of .05 of one per cent to a maximum of .2 of one per cent on the ore; the patent says that the upper limit is five-tenths of one per cent. But there was no talk as to the type or kind of oil; it was any and every oil as to which they advanced these propositions. But more than four pounds of oil (.2 of one per cent) to the ton were not used in practice and over five-tenths of one per cent was impossible, according to the Hyde record.

I have not the slightest doubt that if there is anything at all in this proposition, which the Supreme Court has accepted, that the employment of this minute amount, critical proportion of oil, leads to new and patentable results, it all comes right down to this, that when we use a certain comparatively small amount of oil, that "critical proportion" of oil fits the conditions of operation as a whole better than a larger amount. There are a thousand and one things that are happening in one of these operations and all sorts of actions and reactions between the different elements are going on. Each plant is developed on its own lines and in view of its own problems. Judging from the record, there is as yet no standard whatever as to the kind and not much as to the amount of oil that is used. No two plants, as far as I can see, use the same thing and yet they all get results.

Having through Mr. Higgins' work made the discovery of the "critical proportions", the patentees filed their English application in which they referred, as in their United States patent, to all oily substances which have a preferential affinity to metalliferous substances as the thing to use, and, as they had experimented with oleic acid, named that only as a specific illustration, exactly as in the United States patent. But when they filed their final British specification, which is always a more carefully prepared document, they gave one other illustration

of a specific oil that might be used; and what was that? It was "petrol", a petroleum product, like fuel oil and kerosene, but of less specific gravity. It was in fact gasolene. The patentees then had no doubt that petroleum products such as we use with other oils, were quite the kind required and they said so by naming "petrol" in their final British specification. Meanwhile, they had filed their application in the United States, which was like their first specification in England in that it mentioned specifically only oleic acid. Let us see what the language is that was used in their United States patent.

> "This invention relates to improvements in the concentration of ores, the object being to separate metalliferous matter, graphite, and the like from gangue by means of oils, fatty acids, or other substances which have a preferential affinity for metalliferous matter over gangue."

Now, from the argument of my learned brothers, your Honors would certainly expect, when looking into the patent, to see right there in the forefront a statement of the importance of using only those oils and those fatty acids, if there are any, or other substances, if there are any, which are capable making a nice, beautiful froth of the peculiar kind which alone the patentees wanted. That is what might be expected to be there; but there is nothing of the sort. And that fact is significant. It is a circumstance which is sufficient, particularly when coupled with many others, to persuade me, as I think it will your Honors, that the character of the oil, provided it has affinity with metalliferous matter, is *not material* and has never been thought to be material, that the oils used by the defendant, all of them, are oils of the patent, and that only the exigencies of this litigation have forced the plaintiffs to the contentions that the frothing quality of the oil is alone important and that the fuel oil or kerosene which we use (with other oils) is not just as much the oil of the patent as is oleic acid. As plaintiffs now argue, the thing which is of prime importance and that which stands in the forefront of the patented

invention is to pick out a specially effective *frothing* oil. There was no suggestion in the Hyde case or in any prior litigation or in the opinion of the Supreme Court that, to get results, we must keep away from oils that are not specially good froth makers or anything of that kind. The patent only says to take the critical amount of any oil which has affinity for metallic particles and in other respects do as was done with Cattermole.

The patentees proceed (line 28 of the patent): "We have found that if the proportion of oily substance be considerably reduced — say to a fraction of one per cent on the ore" (what is a fraction of one per cent on the ore? It is clearly not 999/1000. In fact, as I hope to show your Honors, it can only be a fraction of not over .5 one per cent. In the English provisional specification filed about the same time, the patentees say "a *small* fraction of one per cent"), "granulation (which characterized the use of more oil in the Cattermole work) ceases to take place, and after vigorous agitation there is a tendency for a part of the oil-coated metalliferous matter to rise to the surface of the pulp in the form of a froth or scum. This tendency is dependent on a number of factors." Then the patentees, at line 70, page 1 of the patent, give the specific example which is the complete and binding definition of what they mean by "a small fraction of one per cent". There they describe a certain ore which is to be mixed with water, state the amount of mineral acid or acid salt to be used and say "to this is added a very small proportion of oleic acid (say from .02 per cent to .5 per cent on the weight of ore). The mixture is warmed say to 30 degrees to 40 degrees Centigrade and is briskly agitated in a cone mixer or the like as in the processes previously cited (Cattermole) for about 2½ to 10 minutes, until the oleic acid has been brought into efficient contact with all the mineral particles in the pulp". They say, line 96, "the minimum amount of oleic acid which can be used to effect the flotation of the mineral in the form of froth may be under .1 per

cent of the ore; but this proportion has been found suitable and economical".

Now, in view of that specification, in view of the testimony and of the argument which persuaded the Supreme Court, can there be any doubt as to what is the "small fraction of one per cent" of oil to the use of which the Supreme Court has limited the claims? In this connection what is said on that subject by one of the shrewdest and most intelligent of plaintiffs' experts, Dr. Charles F. Chandler, the "dean of chemists" as counsel call him, an experienced witness who did all that could be done in support of plaintiffs' case? He testifies, Volume 2, page 180, as follows:—

"42 *X-Q.* In treating an ore containing eight per cent of zinc as blende and the remainder consisting of non-metalliferous gangue, what would be the maximum and the minimum amounts of oil per ton of ore to be used according to the instructions appearing in lines 28–30, page 1, of patent No. 835,120, this being the patent in suit? Will you also apply the same question to an ore containing four per cent of zinc in the form of blende?

A. The patent in suit, as I understand it, does not specify any particular quantity of oil with regard to the percentage of zinc present in the ore. The specification simply gives general indications of possible quantities that might be found useful. In lines 28–30, to which you refer in your question, no specific quantity is mentioned. The inventors simply state, referring to the Cattermole patent which has just been previously discussed, that four to six per cent of the weight of metalliferous matter present is employed, that they have found that if the proportion of oily substance be considered reduced, say to a fraction of one per cent on the ore, granulation ceases to take place. *What this fraction of one per cent is, they do not mention. The only way in which I can interpret this fraction of one per cent is by referring to other portions of the specification, where this fraction of one per cent is expressed in figures,*

for example, at line 81, of page 1, of the specification, is the following statement, speaking of the ore: —

> *'To this is added a very small proportion of oleic acid (say from 0.02 per cent to 0.5 per cent on the weight of the ore)'.*

"That is, from 1/50 of one per cent up to one-half of one per cent. The specification does not intimate that these proportions of oil or oleic acid are to be used indiscriminately on the ores. Special directions are given for preliminary tests with different ores and different oils. Consequently it does not follow from the specification that the maximum quantity of oleic acid mentioned would be used on four per cent or eight per cent ores. On the contrary, it is especially stated, beginning at line 96 on page 1 of the specification,

> 'The minimum amount of oleic acid which can be used to effect the flotation of the mineral in the form of froth may be under 0.1% of the ore, but this proportion has been found suitable and economical.'

43 *X-Q.* We will refer again to lines 28–30 page 1, of the specification of the patent in suit, and in connection therewith I would like you to state whether 9/10 of one per cent is not 'a fraction of one per cent'?

A. It certainly is, *but the paragraph does not indicate that that is the fraction that the inventors refer to. We have to seek further information in the specification to ascertain what particular fraction they are referring to by the expression 'a fraction of one per cent'.*

So that that fraction of one per cent, may it please the Court, is, as Professor Chandler says, inevitably less than one-half of one per cent; it may be one-tenth of one per cent, but it is clearly less than one-half of one per cent. We contend that "a fraction of one per cent" means in the patent and its claims exactly what Professor Chandler found it to mean,

namely, a fraction not over five-tenths of one per cent. We contend that that is exactly what the Supreme Court decided and that in so far as we have used more than five-tenths of one per cent of oil (it seems too clear for argument that no infringement is possible if over one per cent is used), we have not infringed. We have not infringed, therefore, in any of our operations since we gave up using minute quantities of oil, a few days after the decision of the Supreme Court instructed us as to the true construction of the patent.

The first claim of the patent is as follows: —

> "The herein-described process of concentrating ores which consists in mixing the powdered ore with water, adding a small proportion of an oily liquid having a preferential affinity for metalliferous matter, (amounting to a fraction of one per cent on the ore"), not any fraction of one per cent, but the fraction they there refer to, namely, less than .5 of one per cent — "agitating the mixture until the oil coated mineral matter forms into a froth, and separating the froth from the remainder by flotation."

There, again, there is no suggestion as to the selection of an oil because it has more or less "frothing" qualities. We are to take any oil which has the required affinity for metalliferous matter and get the froth which comes from the use of that oil. That represents one class of the claims. That claim and other like claims were sustained by the Supreme Court.

Now, if your Honors will turn to Claim 9 of the patent: —

> "9. The process of concentrating powdered ores which consists in separating the mineral from the gangue by coating the mineral with oil in water containing a small quantity of oil, agitating the mixture to form a froth and separating the froth."

That claim and also Claims 10 and 11 which are like it, the Supreme Court held to be invalid. Using a "small quantity" is not enough. To practice the invention or to *infringe*, the

critical proportions, as set out in the patent and disclosed in the testimony in the Hyde case, must be used. It is interesting, may it please the Court, to see that in plaintiffs' efforts to get that Claim 9 (Claims 10 and 11 are like it in naming a "small quantity" of oil) sustained in the Supreme Court, they portrayed to the Court the exact situation existing in this case, and asked the Court to sustain the three broad claims that were declared to be invalid in order to protect them in just the emergency that here exists. Here is what plaintiffs said, and I read from our brief at page 40: —

> "Claim 9 is the *broadest claim*. The amount of oil is stated to be 'a small quantity'. The process is stated to include 'coating the mineral with oil in water containing a small quantity of oil, agitating the mixture to form a froth and separating the froth'. The essentials of agitation of the ore in powdered form diffused in water in the presence of a small quantity of oil, so as to form a froth and thereby to utilize air bubble separation, are set forth, as well as the completion of the operation of concentration or separation by separating the froth. The novelty of the invention as thus defined is unquestionable. Conditions may well arise in the future wherein" — they said this to the Supreme Court and it was in view of this argument that the Supreme Court said that claim was invalid — "*conditions may well arise in the future wherein the critical oil proportion is increased by reason of a useless absorption of the oil within the pores of a gangue material, or wherein an oil or a mixture of oils is employed having unusual characteristics, as a result of which the critical oil proportion may be one per cent or slightly more.* Under such conditions this and the two following claims (10 and 11) may be necessary to protect the invention".

But the Supreme Court said no; when that condition arises, the invention will not be used. The public has a perfect right to use a small quantity of oil in what is in other respects the

patented procedure, based on Cattermole. There can be no claim in this patent that will cover an alleged process unless the vital point of that process the "critical proportions" of oil are employed. That was the invention and it was but a single step from the prior art and not a long one. That was what the Supreme Court decided, and because it so decided (and on that ground only), Claims 9, 10 and 11 were declared invalid. The effect of the decision was to give to the patentees a monopoly of the invention which, as they argued, and as the Supreme Court found, they had actually made. They control, under the patent, all the advantageous results that follow from the use of less than .5 of oil to the weight of ore. We have none of that advantage. The plaintiffs say that we are losing money, a million dollars a year, all the time because we do not use the invention (see our brief, pp. 22–25). We prefer to stand this loss rather than to pay the plaintiffs the price they ask for a license to use the invention. We sacrifice the advantages of this invention, because the Supreme Court has said that the employment of this critical proportion of oil belongs to the plaintiffs. We get along without it, as we have the right to do, and pay the penalty, according to the plaintiffs, by increased cost and reduced profits.

Your Honors now so well understand the nature and character of the decision of the Supreme Court that I shall say only a word further on the subject. The Court's opinion begins on page 105 of this volume of printed opinions. I will pass over what they say about the prior art simply with this remark: I earnestly urge your Honors to start out in the study of this case, *first*, from the point of view that Claims 9, 10 and 11 were declared invalid by the Supreme Court with consequences that are controlling in every branch of the present case; and, *second*, by reading the opinion of your Honors in the Hyde case (page 17 of the volume of printed opinions), which is a complete and adequate discussion of the entire situation then before the Court, and which, I respectfully submit, is affirmed and accepted by the Supreme Court

except in a single particular. In this Court's former opinion will be found a full discussion of the prior art which I do not think can be improved upon. This Court's view of the prior art was, I think, clearly adopted in substance by the Supreme Court, as the basis of its finding, that the "final step" taken by the patentees "was not a long one" and that therefore the patent must be strictly limited to the use of oil in the "critical proportions", so that Claims 9, 10 and 11 were invalid. This Court held that the use of a minute amount of oil instead of a larger amount was only a "question of degree" and therefore not patentable. The Supreme Court, recognizing, as did this Court, that the entire alleged invention of the patent resided in the use of this specific minute quantity of oil, was persuaded that thereby there was produced a new and important result, differing in kind from what went before. In that respect and in that only it differed from this Court.

On page 108 of the Volume of Opinions, the Supreme Court says that "the process of the patent in suit, as described and practiced, consists in the use of an amount of oil which is 'critical' and minute as compared with the amount used in prior processes". Now, let us stop there for a moment. The invention "consists in the use of an amount of oil which is 'critical' and minute as compared with the amount used in prior processes". If we do not have that as part of our process we do not have the invention. It is just exactly as if it was a combination patent for the combination of elements A, B and C. One who does not use A, does not infringe; so here, if we do not use the "critical proportions" of oil, we do not infringe, whatever else we may do, for that is an essential step in the process.

The Court proceeds: "and in so impregnating with air the mass of ore and water used, by agitation —'by beating the air into the mass'— as to cause to rise to the surface of the mass or pulp a froth, peculiarly coherent and persistent in character",— all of which comes, as the plaintiffs then insisted, from the use of the "critical" amount of oil; there was no pretense

that the result could be attained in any other way —" which is composed of air bubbles with only a trace of oil in them, which carry in mechanical suspension a very high percentage of the metal and metalliferous particles of ore which were contained in the mass of crushed ore subjected to treatment".

All these words describing the froth are apt for the froth of Cattermole and the prior art except that "there was only a trace of oil" in the patentees' forth and it was more "coherent and persistent" (a difference in degree only) and except, as the patentees contended, they got far more mineral in the froth and by the process. That last is an important difference. An invention by which one is able to get out an unusually large quantity of mineral is an important invention. But all this novelty, merely in degree, in the froth, comes back to the single point of the presence and action of the new thing, the use of oil in the "critical proportion" only, which it required by the patent. As to agitation, that was old in the prior art. The plaintiffs have asserted here that the agitation in the Cattermole process was just the same as in that of the patent and that the Supreme Court did not imply the contrary, but was referring to other items in the prior art when it spoke of the agitation of the patent in suit as being of a special character.

The Supreme Court finally concludes, page 115: "While we thus find in favor of the validity of the patent, we cannot agree with the District Court in regarding it valid as to all of the claims in suit. As we have pointed out in this opinion there were many investigators at work in this field to which the process in suit relates when the patentees came into it, and it was while engaged in study of prior kindred processes that their discovery was made. While the evidence in the case makes it clear that they discovered the final step which converted experiment into solution, 'turned failure into success'" — that is the step from Cattermole, Froment, Everson, Kirby and others — "yet the investigations preceding were so informing that this final step was not a long one and the patent must be confined to the results obtained by the use of oil within the

proportions often described in the testimony and in the claims of the patent as 'critical proportions'".

"One pound to four pounds", that is what is in the testimony. "Five-tenths of one per cent to two one-hundredths of one per cent", that is what is in the patent. The phrase of the patent "amounting to a fraction of one per cent on the ore" means clearly a fraction of less than five-tenths of one per cent. Could anything be more certain?

The Court says that Claims 9, 10 and 11 are invalid. It says that the great, fundamental feature of the invention was the discovery of the remarkable results arising from the use of this "critical proportion" of oil which was hit upon by Mr. Higgins in his series of tests of what would happen if in practising the Cattermole process the amount of oil was reduced by gradations down to the vanishing point. That is the great thing. Because of it, there was a patentable process, and on that ground, and on that ground only, the patent was sustained. But in spite of the fact the Court was warned by counsel that some one might come along and use a greater amount of oil, say, over one per cent, of which some part might be unnecessary and ineffective and go to waste, and plaintiffs' plea that the claims with the phrase "a small quantity" in them should be sustained to meet that situation, the Supreme Court said: "No; we have defined this invention. It involves the presence of an oil or oily substance which has a 'preferential affinity for metalliferous matter' when used in the 'critical proportions' which are so clearly set out in the testimony and the patent. We declare the patent limited to that feature. The claims that are not clearly so limited we declare invalid."

Of course, there is nothing in the decision of the Supreme Court which excludes from the scope of the patent any oil or oily substance which has a preferential affinity for metalliferous matter over gangue. The terms of the patent itself made that impossible. There was no evidence and no contention that any such oil was outside the range of the patent. The proposition now advanced that fuel oil, or other petroleum products such

as we use, are not the oils of the patent is altogether new. It is advanced as part of the plaintiffs' argument, altogether fallacious as it seems to us, that because some fuel oil or some kerosene may not "froth" as well as some other oils, we can not count such oils in figuring our percentage of oil to ore. But the complete answer is that the patent makes no such distinction and the record shows that fuel oil and kerosene (the patentees specifically named "petrol", another petroleum product, in their final British specification and nothing else except oleic acid) do froth. Some may froth more than others and some oily substances may froth more and some less than fuel oil or kerosene. But the patent is concerned only with the froth, whatever it may be, that *comes from the oil that is used*, but its scope is limited to the employment of the critical proportions; and frothing is only one function of the oil in the patented process. It must exercise its affinity for metalliferous matter and some oils undoubtedly have a greater such affinity than others. It must be cheap and accessible at the place where the process is to be practised. The whole matter is a compromise and what is established in this case is that we use oils of the patent, but that we avoid infringement of the patent as construed by the Supreme Court by reason of the large proportion of oil to ore which we use. We do not use oil in the "critical proportions" required by the patent and do not infringe. As to our froth, it is exactly that froth which inevitably follows from the use of the amount and kind of oil that we use in the environment in which we use it. It cannot be the froth of the patent which comes only when the "critical proportions" of oil are employed. I again call the Court's attention to the infinite variety of oils and combinations of oils which the record shows have been employed in this art, and to the fact set out in our brief (pages 41–48) that petroleum products have been generally used and recognized as useful in flotation processes.

It is unnecessary for me to say that this patent is in no sense for a froth. However persistent, effective and beautiful the froth may be which is produced by the practice of the inven-

tion, that is not the subject of the patent. The patent is for the *process*, one stage of which involves the presence of a froth only new to the extent to which its precise and specific character is determined by the use of oil in the "critical proportions". To infringe that patent, all the steps of the process must be employed, and if any substantial step is omitted, there is no infringement. We do not infringe because we depart from the patent in the particular which the Supreme Court has determined to be that upon which alone novelty and invention can be predicated. While we use oil of the character required in the patent, we do not use it in the "critical proportions" in which it must be used to practise the invention. We have found a mixture of oils which works fairly well on our ore. We get results that the plaintiffs say are much inferior to what we might get if we used their process. If such is the case, we deliberately sacrifice efficiency rather than pay the price which the plaintiffs would exact as a license fee.

We keep entirely out of the domain established for the plaintiffs by the decision of the Supreme Court. We do not use the plaintiffs' process for we use far more than the "critical proportions" of oil which is essential to that process. But they say that some of that oil goes to waste or is ineffective. That fact is not established by the record; but even if true, I again remind your Honors that Mr. Kenyon told the Supreme Court that he wanted to have Claims 9, 10 and 11 sustained because somebody might do just what we are doing, according to his present contention, use a large amount of oil, some of which would go to waste or be otherwise ineffective. But in spite of that plea, Claims 9, 10 and 11 were declared invalid with the effect that even if more oil is used than is necessary to produce some *other result*, he is not an infringer who uses that greater quantity of oil and is satisfied with the result which he gets.

I respectfully submit that such is the inevitable logic of the opinion of the Supreme Court based upon the grounds which I

have attempted to set forth. How can it be otherwise when the patent and the whole record before that Court were definitely to the effect, not that the matter of frothing oils, as distinguished from some other oils, was in question or that any attention was to be paid to the frothing quality of the oils, but that there was a great discovery found in practising the Cattermole agitation method of separating minerals when the amount of oil was reduced to these "critical proportions". The Supreme Court declared that to be a new thing and entitled to patent protection. The defendant contended that it was not new, that it was anticipated by Froment, by Everson, by Kirby and the rest of the prior art, and that for that reason the Court ought to say that there was no patentability. But the Supreme Court refused to follow the defendant to that extent, reversing this Court on the single point that the discovery of the "critical proportions" was not a mere matter of degree. In all other respects, I respectfully submit that the Supreme Court followed this Court.

The matter of the disclaimer is intimately interwoven with the other questions in the case. Mr. Bull read to your Honors from page 51 of that brief of the appellees, which is called a supplemental brief, where they analyze Claims 9, 10 and 11 as the same are affected by the disclaimer and, I think, clearly themselves show the extravagant breadth of those claims, as modified by the disclaimer, in view of the decision of the Supreme Court. The phrase "a small quantity" is still in the claims and if the disclaimer has any force whatever, it surely does not define that "small quantity" so as to bring it within the "critical proportions" which, as the Supreme Court insisted, characterize the invention. That was the only and the specific point to which a disclaimer should have been directed. The disclaimer, on its face, leaves the claims in shape to cover any quantity of oil, however large and however much in excess of the "critical proportions", provided anyone could call it a "small quantity". if the results obtained are those that would be obtained by the use of the critical amount of oil. We con-

tend that the claims are just as broad as they were before this disclaimer if not more broad, and that therefore the disclaimer is ineffective, is no disclaimer at all, and that the plaintiff had no standing, under the patent, to bring this suit and has now no standing in this Court. This bill, therefore, must be dismissed. Further we contend that the plaintiff not having filed a disclaimer within a reasonable time (it has filed no real disclaimer up to date), the invalidity of the patent can now never be cured.

In the court below, Mr. Kenyon said to the Court, as appears from Volume 8, page 4695, of the record, where he is speaking about the three Claims 9, 10 and 11, as they stood after the disclaimer:

> "Now, the relation of these three claims as limited by disclaimer to the other claims is, as your Honor has certainly held in dealing with this matter of disclaimer, that these three claims certainly cover and included in their original form what the other claims covered and included. They cover and include all of them.
>
> "And if they differ from these other claims" — that is, the other claims in the patent in suit — "they differ only in covering more. Now, by disclaimer we have cut down that 'more' to something less than it was originally, but still not to something less than these other claims. *It still remains that these claims 9, 10, and 11 as limited by disclaimer are, if they differ at all from the other claims, broader than the other claims.*"

They are still capable of being construed as the broadest claims in the patent, they say.

I respectfully submit that it was almost playing with the Supreme Court to file a disclaimer of that sort, which left the matter in such shape that counsel are able to argue that Claims 9, 10 and 11, after the disclaimer, are broader than the other claims in the patent; when, as your Honors will remember, that what the Supreme Court says is very plain, indeed: —

> "Therefore, the decree of this court will be that the patent is valid as to claims Nos. 1, 2, 3, 5, 6, 7 and 12, and that the defendant has infringed those claims, *but that it is invalid as to claims 9, 10 and 11.*" And why are those claims invalid? Because "The patent must be confined to the results obtained by the use of oil within the proportions often described in the testimony and in the claims of the patent as 'critical proportions'."

Your Honors understand that when the Supreme Court had said that these claims were invalid the patent immediately became moribund, so to speak; that is, it would surely die unless *within a reasonable time* a proper disclaimer was filed; and during that reasonable time that might elapse before the disclaimer was filed, nothing could be done to enforce the patent; no decree could be entered in the Hyde suit; no new suit could be brought or anything done until a proper disclaimer was filed. And if the disclaimer was not filed within a reasonable time, the patent was for all time invalid. Plaintiffs had it in their power to go to the Patent Office and file a disclaimer cancelling these claims. If they filed a proper disclaimer within a reasonable time, the patent, as reformed by the disclaimer, would be in force for the remainder of the term with the scope and effect given to it by the decision of the Supreme Court. If a proper disclaimer was not filed within a reasonable time, the entire patent became invalid and of no force or effect whatever. A disclaimer which made these claims exactly like the other claims of the patent would be nonsense; but the plaintiffs now insist that this Court, as an act of grace, may construe the disclaimer as having just that effect, if otherwise your Honors would be of the opinion that the disclaimer was so vicious as to be no disclaimer at all. We respectfully submit that the Court should not take that point of view.

The situation seems clear. The plaintiffs deliberately elected to make an effort to have their cake and to eat it, too. That

may sometimes be possible in litigation, but not generally where the question is one of carrying out the orders of the Supreme Court of the United States.

Plaintiffs deliberately elected to file a disclaimer which would, on its face, not comply with the order of the Supreme Court of the United States, but which would leave it open for them to argue, as they have practically argued in this litigation, that Claims 9, 10 and 11, after the disclaimer, were broader than the others which were sustained by the Supreme Court, in that they (even after the disclaimer) were *not* limited to the use of the "critical proportions" of oil so much emphasized by the Supreme Court, but were to be construed as covering a process in which one, two, three or more per cent of oil (in fact, any percentage that might be called a "small quantity"), was employed, provided the result of the operation of the process was that called for by the patent. And they undoubtedly proposed to argue that such "result" would be obtained if any one carried on flotation by the agitation of air, oil, ore and water with quantities of oil in excess of the "critical proportions", thereby producing a useful froth, even if that froth did not have the peculiar characteristics inevitably imposed upon the patented froth by the employment of oil in the "critical proportions". It seems to us that this is the obvious meaning and intended force of the disclaimer.

Of course, the plaintiffs now assert that if there is danger of the Court taking this view, your Honors may as an act of mercy construe the claims as affected by the disclaimer as if they were identical with the other claims. It does not seem proper that your Honors should in any event take that view of the force of the disclaimer.

It would have been easy for the plaintiffs to have filed a disclaimer that would have exactly complied with the spirit and letter of the Supreme Court's order, but that certainly was not done.

I respectfully submit, may it please the Court, that when your Honors consider the disclaimer and its effect upon these

claims, you will determine that the disclaimer is not drawn so as to limit the invention of the patent in suit, which is purported to be covered by these claims, to the "critical proportions" or the result of the use of these "critical proportions"; but it is certain that what the Supreme Court meant was that there could not be a claim in this patent that did not involve as a necessary feature the employment of oil within the range of the "critical proportions" and that so long as the quantity of oil was defined by the phrase "a small quantity", the "critical proportions" were not in the claims.

Is it not perfectly clear that the disclaimer filed does not at all accomplish the result of changing "a small quantity" into "critical proportions" of oil, whether those "critical proportions" are expressed in the phrase "a fraction of one per cent" or in any other way? Obviously what is hoped to be the effect of that disclaimer is that if the user of a flotation process employs five per cent of oil (for five per cent may be said to be "a small quantity") and by the use of that five per cent gets good "results", in the form of large recoveries and the kind of a froth that he wants, such being the "results" (in a vague sense) which according to the patent and the record are obtained if two-tenths, or three-tenths of one per cent of oil is used, then Claims 9, 10 and 11, as affected by the disclaimer, would cover the process so that he who used the five per cent would be an infringer even if he did not infringe the other claims.

The plaintiffs undoubtedly feared, simply carrying out the thought that was expressed to the Supreme Court in their argument to which I have already referred (which thought failed utterly to influence the Court), that some time or the other the Butte & Superior Company or some one else might say "we cannot afford to pay what the patentees demand for a license. It is better for us to work out a process of our own with our own peculiar methods of manipulation, with our own special machinery and with our individual selection of oils, by which we can secure flotation that is good enough for us, using such a large amount of oil that we shall have gotten away from

the 'critical proportions' to which the patent is limited but losing the advantage, if there is any, which might be derived from the use of this critical amount of oil; having more than five-tenths of one per cent we shall, whatever may be our loss, endure that sacrifice, as every one does when he cannot afford to take a license and avoids infringement by avoiding the patent and not getting the benefit of the patented invention". And the disclaimer was ingeniously drawn so that, in that event, Claims 9, 10 and 11 might be said to be infringed, on the theory that the "result" was alone important, five per cent being a "small quantity" although not within the critical proportions.

That is our position, may it please your Honors, and I ask your Honors to recognize that if this disclaimer is not a proper disclaimer, the situation is exactly what it would be if no disclaimer had been filed; in which case the plaintiffs, having no patent at all (for it was invalid) had no right to bring this suit, had no right to any decree and no status under the patent. We insist that *no* real disclaimer of Claims 9, 10 and 11 having been filed, *no* disclaimer having been filed which modified those invalid claims so that they were limited, as the Supreme Court said they must be limited, the bill in this case must be dismissed. Such is the law as laid down in the authorities cited in our brief.

Moreover, the patent should now be declared finally invalid, because there has been a clear and absolute lack of diligence in filing a proper disclaimer. It may well be that if the pretended disclaimer had been a real disclaimer, had been any disclaimer at all within the meaning of the statute, the delay of a hundred days or so after the decision of the Supreme Court and before the filing of the paper, would not have been unreasonable. The plaintiffs were entitled to time to determine what to do; but to take the hundred days and then to file such a paper as this, which, I submit, is no disclaimer at all, exhausted plaintiffs' rights. Any furher delay was clearly unreasonable. And now years have elapsed with no real disclaimer filed. This suit

has been tried and carried to this Court on a patent which, as we respectfully submit, still had in it claims which are invalid under the decision of the Supreme Court, for the reason that "a small quantity" now means, as it meant before the alleged disclaimer was filed, a greater proportion of oil than the "critical proportions" which alone could give validity to any claim in the patent. The Supreme Court so read Claims 9, 10 and 11 before the alleged disclaimer. We respectfully submit that this Court should now so read the claims, after the so-called disclaimer, and that the bill in this case should be dismissed.

Honorable Erskine M. Ross, William W. Morrow and William H. Hunt, Judges of the Circuit Court of Appeals for the Ninth Circuit.

Minerals Separation, Limited, et al., vs. Butte & Superior Mining Company—No. 3081.

Sirs:—

We have received copies of plaintiffs-appellees' letter to your Honors, dated April 6, 1918, which is, in effect, a supplemental argument. We do not wish to enter upon a battle of briefs, and would much prefer to let the matter rest where it is; but appellant is entitled to the last word and the importance of the case to the American mining public is such that we feel we must leave no stone unturned in our effort to assist the Court in dealing with the extremely large record in this case.

The purpose of the latest argument for the plaintiffs is to convince the Court that the proofs in this case establish the proposition that mineral oils will not produce a froth, and are not useful for concentration purposes, although it is admitted that they have a "preferential affinity for metalliferous matter", and that larger quantities of oil than a small fraction of one per cent., except in the case of mixtures of oils, are not permissible in the agitation-froth process. The exact contrary to these propositions is established in the record, as we have shown in our main brief, supplemented by our typewritten memorandum handed up during Mr. Bull's oral argument. As these references to the record are now scattered through our brief and type-written memorandum, it seems to us that the best reply we can make to plaintiffs' arguments, and the best service we can render to the Court is to collect these scattered references together and repeat them here without argument. This will not be new argument, but only old argument rearranged.

Crude petroleum as it comes from the wells is divided by what is termed "fractional distillation" into various grades, which are known in commerce as "gasolene", "kerosene" "fuel oil", "lubricating oil" and "residuum". That is to say,

when crude oil is heated to say, 350° F., a certain amount of vapor is driven off and that vapor when condensed is sold as "gasolene". When the remainder is heated to say, 600° F., a certain additional amount of vapor is driven off and that vapor when condensed is sold as "kerosene". When the remainder is heated to certain higher temperature, an additional amount of vapor is driven off and that vapor when condensed is sold as "fuel oil". Higher temperatures yield "lubricating oil". That which is left after the "lubricating oil" has been distilled off is known as "residuum". These several grades differ from each other, therefore, only in their boiling points. That these various grades of petroleum (mineral) oils all have a "preferential affinity for metalliferous matter" is now admitted, and that all these various grades are useful in affecting froth concentration is affirmed or admitted by both plaintiff's and defendant's witnesses.

That petroleums (mineral oils) will produce froth and effect concentration is fully established out of the mouths of the patentees and plaintiffs' other witnesses:

Thus, the patentees, Sulman and Picard, in their report to the chairman of Minerals Separation, being the first written description of the invention at bar, said (Tr., Vol. III., page 1118):

> "We may here conveniently note that other *oils* besides oleic acid may be employed in this modified recovery process, but so far as Broken Hill is concerned, Oleic acid gives by far the best results. *Petroleum residuum* added as emulsion, *paraffine oil alone*, R_3P_1 and R_1P_3 emulsions,* have also been used, and all give small proportions of float, but do not act nearly so vigorously or efficiently on Broken Hill ores as plain Oleic acid."

The complete specifications of the British patent which corresponds with the patent in suit describe in the working

* "Petroleum residuum" referred to above is the heavier fractions left in the still after the gasolene and kerosene have been distilled off. "Paraffine oil" above referred to is the English name for *kerosene*. "R_3P_1" means a mixture of three parts residuum and one part paraffine oil, and "R_1P_3" means a mixture of one part residuum and three parts paraffine oil.

example the use not only of oleic acid but of "*petrol* or other suitable oil*" (Tr., Vol. III., page 1279, line 38). This statement is repeated in the specification several times and also in the claims (See p. 1279, line 40; p. 1279, line 47; p. 1279, line 56; p. 1281, line 13; p. 1281, line 20; p. 1281, line 26).

The patent in suit starts out (page 1, line 16) by referring to the Cattermole patents and says (line 28): "We have found that if the proportion of *oily substance* be considerably reduced," etc., the results of the patent in suit will be realized. This refers us directly to the said Cattermole for further information as to what are the "oily substances" referred to, and going there we find (Tr., Vol. IV., page 2138, line 89) the "oily substance" described as follows:

> "The 'oil' used may be animal, vegetable or *mineral* oil or *mixtures of these* or such coal or wood tar products or other substances which exercise, like oils, a preferential physical affinity for metallic mineral matter as distinguished from gangue."

Further on, the specifications of the patent in suit say (p. 1, line 61):

> "The proportion of mineral which floats in the form of froth varies considerably with different ores and *with different oily substances*, and before utilizing the facts above mentioned in the concentration of any particular ore a simple preliminary test is necessary to determine *which oily substance* yields the proportion of froth or scum desired."

When we come to the claims we find that they define the oil as "*an oily liquid having a preferential affinity for metalliferous matter.*"

Sulman, one of the patentees of the patent in suit, in a subsequently issued patent (No. 835,143), (Vol. IV., page 2169, line 15) says, referring to the patent here in suit:

> "In the process described in the specification of the previous patent application, Serial No. 262,889, filed

* "*Petrol*" is the English name for *gasolene.*

May 29, 1905,* a mineral pulp is agitated with a small proportion of an oily substance, such as oleic acid *or petrol or other oil*, amounting to a fraction of one per cent. on the ore," etc.

Plaintiff's engineer, Higgins, testifying in the Hyde case (Vol. IV., page 1811), said :

"Q. 110. What other oils ?

"A. I have obtained satisfactory results by the use of *petrol*, certain portions of the distillate of *crude petroleum, such as cosmos oil*, vegetable oil, such as palm oil, cotton-seed oil, linseed oil and animal oils, such as lard oil, and oil squeezed from beef fat.

"Q. 111. Have you been successful in the use of eucalyptus oil ?

"A. Yes.

"Q. 112. Is the petrol to which you refer the distillation product of petroleum, sometimes known as 'gasolene' ?

"A. The petrol I refer to is one of the lightest constitutents of crude petroleum. I do not know whether gasolene is the same material.

"Q. 113. The petrol you refer to is the distillation product commonly used in internal combustion engines, such as automobile engines, is it not ?

"A. Yes, it is known as .680 spirit.

"Q. 114. Is the 'paraffine' referred to in Higgins' Report, March 16, 1905, the same as lighting oil or kerosene ?

"A. Yes."

* * * * * *

"Q. 117. Can you state what the smallest quantity is of eucalyptus oil that will produce a froth, operating upon, say, some one of the Broken Hill ores with which you have experimented ?

"A. The smallest quantity of eucalyptus which I have found in my experiments on Broken Hill ore to give a satisfactory concentration as a froth, is half a pound to the ton of ore.

"Q. 118. Would you obtain equally good results on the same ore using one-half pound of *Cosmos oil ?*

* The "specification of the previous patent application" here referred to is the specification of the patent in suit.

"A. Speaking from memory, I believe the results on *Cosmos oil* may have been a little lower when such a quantity of oil was used.

"Q. 119. Will *Cosmos oil* in any quantity give as good a recovery as eucalyptus oil?

"A. Yes, I think so.

"Q. 120. You would have to use more of the *Cosmos oil* than eucalyptus oil?

"A. I am not certain that I should do so. I have not made comparative experiments with these two oils, and it is possible that the same results might be obtained in different periods of time for the agitation.

"Q. 121. What is *Cosmos oil*, that is, what is its origin, and what is it used for?

"A. It is a *petroleum distillate*, sold for lubricating purposes.

"Q. 122. Is it what is sometimes called cylinder oil?

"A. I do not know. I think it is more in the nature of a valve oil.

"Q. 123. Is the Cosmos oil the Standard Oil Company's Cosmos oil.

"A. Yes, the samples were obtained from their London firm, the Anglo-American Oil Compauy."

Plaintiff's witness Higgins, further says in this case, that petroleums (fuel-oil and kerosene), when used with a vegetable oil are useful in the process in the patent in suit for the purpose of "*preventing the coarse mineral from falling out of the froth*" (Tr., Vol. VIII., p. 4738, Qs. 39 and 40); that it prevents "showering"—that is, it helps to keep the mineral from falling out of the froth (Tr., Vol. VIII., p. 4606, Qs. 421 and 422).

Furthermore, plaintiff's witness Chapman, says in this case concerning petroleum (Tr., Vol. VIII., p. 4436, Q. 38):

"I have on many occasions used inactive oils, particularly those like fuel-oil, kerosene and stove-oil to produce a *condition of froth* in the Spitz box that will maintain a condition of overflow. The addition of these re-agents in small quantities is *extremely useful* for the purpose, and considerably eases up the operating work."

That petroleums (mineral oils) will produce froth and affect concentration is also fully established by the testimony of defendant's witnesses :

Phillips, defendant's witness, was put on the stand to identify certain photographs he had made of froths. These froths, made simply for the purpose of photographing them, were produced in a bar-mixer. One of his experiments was known as No. 18, and the photographs obtained in that experiment are in the record as Exhibits 100, 101 and 102 (Vol. IX., pp. 5116, 5117 and 5118). In this experiment 25% of kerosene was used. The experiment was repeated in Court and a good froth was produced (Vol. VI., pp. 2921 to 2923). Plaintiffs' witnesses in rebuttal contended that this kerosene was contaminated with some soluble frothing agent although it was in so small amount they were not able to isolate it ; and they contended that the presence of this contaminant was responsible for the froth produced in Phillips' experiment in Court (Vol. VIII., pp. 4618 and 4619). The kerosene in question had been obtained by Phillips from Dosenbach. Dosenbach when he was on the stand was cross-examined about this kerosene, and he stated (Vol. VII., pp. 3890 to 3892) that it was taken from the regular stock of kerosene at the plant; that nothing had been added to it, although the storage tank in which it was put when it was received might previously have contained another oil. In surrebuttal, defendant examined its expert, Dr. Sadtler, concerning this kerosene, and he testified that by extremely careful analysis he found it to contain .012 of one per cent. of impurities (Vol. VIII., pp. 4786 to 4789). He further testified that the impurity might be paraffine and not a foreign substance (Vol. VIII., p. 4802, Q. 11). He further stated that since in the Phillips experiment 25% of kerosene was used, the percentage of impurity present on the ore was 25% of .012% ; or, in other words, was three one thousandths (.003) of one per cent. on the ore (Vol. VIII., p. 4803, Q. 11), and that so small a quantity could not have had any possible effect in the production of froth in the Phillips experiment (Vol. VIII., p. 4802, Q. 11). To set this matter finally at rest, defendant asked Dr. Sadtler to repeat the Phillips test, using a sample of this

kerosene which had been *double-washed*, so that it could not possibly contain any contaminant (Vol. VIII., pp. 4787 to 4790). This was violently objected to by plaintiffs' counsel, and the Court sustained the objection (Vol. VIII., pp. 4791 to 4801). As we have said in our main brief (p. 62), this was clearly error, because we believed when Phillips made his experiment that the kerosene was absolutely pure (indeed, it was commercially pure) and we had no reason to expect such an attack as was made upon it. The doctrine of surprise entitled us to show that if the kerosene was impure, the impurity did not affect the result of Phillips' experiment.

This Court will not overlook the fact that when plaintiffs' expert Higgins repeated here before it Phillips' 25% kerosene experiment in a bar-mixer, using not our alleged contaminated kerosene but plaintiffs' own kerosene, he obtained precisely the same results which Phillips obtained and which he (Higgins) had criticized. If Higgins succeeded in obtaining different results in his test before the District Court, all we can say is that he lost the trick in the interval, because it will be remembered he stated he used before this Court the same kerosene he had used before the Court below. The simple facts about kerosene are stated by Dr. Sadtler in testimony quoted in our brief at pages 62 and 63. Kerosene produced from some crude oils, or subjected to some special treatment in the process of refining it, will not produce a froth; but, according to Dr. Sadtler's experience, three kerosenes out of four will produce voluminous froth.

Furthermore, defendant's witness, Dosenbach, also made an experiment in the Court below using 25% kerosene or petroleum distillate and agitating it in the square-glass-jar machine. He obtained "a very copious highly-mineralized froth" (Vol. VI., p. 3300, Q. 58 to p. 3303, Q. 61). Not only did he obtain such a froth and gives samples of it to the other side, but he produced an analysis of it. The experiment is known as No. 32, and the analysis appears in Defendant's Exhibit No. 304 (Vol. IX., p. 5542, opposite the title "Kirby, Test No. 32"). The ore used was Utah copper containing 5.87% copper, 6.76% iron and 75.4% gangue ("Insol."). The assay of the con-

centrate showed that it contained 23.94% copper, 23.5% iron and 21.0% gangue ("Ins."). By this process, therefore, the copper content was raised from 5.87% to 23.94%, and the iron content was raised from 6.76% to 23.5%. Adding these figures together we see that the mineral content was raised from 12.63% to 47.44%, while the gangue content was reduced from 75.4% to 21.0%.

That petroleum is not, as contended on behalf of plaintiffs, inert in the process, is also clearly demonstrated by the mill operations at the Arthur Plant of the Utah Copper Company, records of which appear in Defendant's Exhibit 31 (Tr., Vol. IX., p. 4994), which are explained Transcript, Vol. V., p. 2555, Q. 59 *et seq.* In one run (Experiment No. 7) the oil used was 20.33 pounds per ton, it being a mixture composed of 89% of what plaintiffs' witnesses call inactive oils ; that is, petroleum (30% Jones fuel oil and 59% smelter fuel oil), and 11% of what they call active oils (10% American creosote and 1% Yaryan pine oil). In this run the extraction was 98.4%, and the tailings carried 0.076% copper. The actual amount of so-called inactive oil used per ton was, therefore (being 89% of 20.33 pounds), 18.1 pounds, and the actual amount of so-called active oil used per ton was, therefore (being 11% of 20.33 pounds), 2.23 pounds. In another run (Experiment No. 20) *substantially the same amount of so-called inactive oil was used alone* (17.84 pounds of a mixture of the same petroleum ; *i. e.*, smelter fuel and Jones fuel in the same proportions). *In this case the extraction was 95.06% and the tailings carried 0.306% copper.* In another run (Experiment No. 17) *substantially the same amount of so-called active oil was used alone* (1.97 pounds of a mixture of the same so-called active oils ; that is, American creosote and Yaryan pine, in the same proportions). In this case the extraction was 85.72%, and the tailings carried 0.81% copper. These determinations are not contradicted or questioned, and they prove that the petroleum oil used in this process was by no means inactive or inert. They prove it was, indeed, quite as active and quite as efficient in producing the desired results as was the so-called active oil. Indeed, it will be observed that the petroleum when used alone gave higher extraction than

did the so-called active oils when used alone. The highest extraction, however, was attained when they were used together in a mixture, as defendant uses them.

In direct contradiction of the theory of plaintiffs' witnesses that petroleum is in inactive oil and plays no part in the production of foam, Wicks describes what happened one day in the mill of the Chino Copper Co. in the regular course of mill operations when the supply of petroleum was unintentionally shut off. He says the foam immediately disappeared, and no recoveries were obtained until the supply of petroleum was turned on again. At that time they were using 32.27 pounds of oil per ton of ore (Tr., Vol. V., Qs. 87–91, p. 2433).

Defendant's witness Puncheon described similar occurrences intentionally produced in the regular course of mill operations at the Arthur plant, where a mixture of vegetable and mineral oils like that used by defendant was being employed. He says (Vol. VII., p. 3850, Q. 8 to Q. 20) that when the supply of mineral oil was cut off the froth gradually died away in the spitskasten and selective action ceased.

That mineral oils in mixtures, such as defendant uses, are useful in flotation processes (and are not inert and mere diluents) is proved by the acts of plaintiffs' own licenses:

Thus plaintiffs' licensee, the Braden Copper Company, uses a mixture of 1 pound of American wood tar oil to 3 pounds of Texas oil (petroleum) per ton of ore (Tr., Vol. II., p. 284). At that place, therefore, the mixtures of oils used is precisely like that used by defendant, to-wit, one part vegetable oil to three parts of petroleum.

Again, plaintiffs' licensees at the Consolidated Arizona mine use between 2 and 3 pounds of oil to the ton of ore, about one-half of it being Carolina turpentine, and the other half fuel oil and stove oil, both of which are petroleum (Tr., Vol. VII., p. 4100). At this place, therefore, the mixture of oils used is one part vegetable oil and one part petroleum.

Furthermore, the alleged infringers in this country before they adopted the use of oil in quantity above 1% on the ore, used a mixture containing petroleum as one of its components. This was true of the Utah Copper Company at its Magna

plant, and also at its Arthur plant ; it was true of the Chino Copper Company ; and it was true of the Ray Consolidated Company.

Thus, at the Magna plant of the Utah Copper Company, when using less than 0.5% of oil, they always used a mixture of which petroleum (Jones oil) was a constituent (Tr., Vol. V., p. 2689, x-Q. 268 ; also x-Q. 281, also x-Q. 286). Since more than 1% of oil has been used, they have continued to use Jones oil as a constituent of the mixture (Tr., Vol. V., p. 2693, x-Q. 289).

Thus, the Chino Copper Company, when using less than 0.5% of oil, always used a mixture of which petroleum (Jones oil) was a constituent. Since more than 1% of oil has been used, they nave continued to use Jones oil as a constituent of the mixture (Tr., Vol. V., p. 2422, x-Qs. 42 to 44).

Thus, the Ray Consolidated Company, when using less than 0.5% of oil, they always used a mixture of which petroleum (fuel oil) was a constituent. Since more than 1% of oil have been used, they have continued to use fuel oil as a constituent of the mixture (Tr., Vol. VI., p. 3244).

So, the practice of defendant in using a mixture of vegetable oil and petroleum is not peculiar to it, or to the use of quantities of oil above 1% on the ore.

But for the limited supply of vegetable oils obtainable and the high cost of such oils, defendant might use them above one per cent. on the ore, instead of using a mixture composed largely of cheap mineral oils :

The Court will obtain some idea of the great quantity of oil used in modern flotation plants from the testimony of Janney, referred to in our main brief at page 54. He states that to run the flotation plants of the Utah Copper Company alone at their full capacity, using no more than 1% of oil on the ore, would require 87,500 gallons per day, and that they should carry at least sixty days' supply on hand to be safe (Vol. V., p. 2578, Qs. 175, 176). At the same place in our brief, the testimony of other witnesses is noted showing the difficulty they are now having in obtaining enough oil even when the mixture largely consists of petroleum oil to keep their plants running using 1% of oil on the ore.

Dosenbach, defendant's witness (Vol. VI., pp. 3353 to 3356), performed in the Court below an experiment, known as "Test No. 36", in which he used with Butte and Superior ore in a Gabbett mixer 0.2% of pine-tar oil, and produced a froth which was about 1 inch in thickness. He then added more pine oil, raising the amount to 1.62% on the ore. The result was a froth which was about 1½ inches in thickness. This last froth was analyzed and the results appear in the record (see Vol. IX., p. 5543, last line). It will be seen that whereas the original ore contained only 14.7% zinc, the concentrate contained 33.90% zinc, and while the original ore contained 67.0% gangue ("Insol."), the concentrate contained only 31.20% gangue ("Ins."). In other words, by the treatment the percentage of zinc had been raised from 14.7% to 33.90% and the percentage of gangue had been reduced from 67.0% to 31.20%. This experiment was repeated before this Court.

Hyde, in the Hyde case, described a series of tests using oil above 1% on the ore. In one test he used 32.4 pounds of oleic acid per ton, which would be a little more than 1.5% (Tr., Vol. IV., p. 1406). In another, he used as much as 72 pounds of straight cotton-seed oil per ton, which is 5.6% (Tr., Vol. IV., pp. 1406 and 1407). In both cases he obtained a highly mineralized froth and good recoveries. Samples of the ores used and a duplicate of the machine used were furnished to the plaintiffs (Vol. IV., p. 1435, x-Q. 105; also p. 1437; also pp. 1570 and 1571). The results of these tests were never questioned by plaintiffs' witnesses.

So, also, defendants' expert, Dr. Byrnes, in the Hyde case, testified to certain experiments made by him with different large quantities of oil (Vol. IV., pp. 1528 to 1530). He used more than 3.6% of cotton seed oil in one experiment; and the same amount of olive oil in another experiment; and the same amount of oleic acid in another experiment; and one-half the quantity of oleic acid (to wit, 1.8%) in another experiment. In all cases he obtained a highly mineralized froth and good recoveries.

Plaintiffs' expert Chapman testified in the Hyde case (Vol. III., p. 939, Q. 250), that he used in a plant 1.8% *straight oleic acid*, and obtained a froth recovery of 69.78% zinc, and

70.40% lead. While this is not as good a recovery as Hyde and Byrnes obtained in their slide-machine experiments above referred to, yet it was a very good result, as is indicated by the fact that the *patent in suit only claims for the present process a recovery of "about 70% to 80%"* (p. 1, line 105).

Plaintiffs' expert Higgins testified in the Hyde case that he reproduced in a plant Dr. Byrnes' experiment, using 3.6% *straight cotton-seed* oil (Vol. III., pp. 929, 930), and obtained a "copious" froth which "though oily in appearance *when closely examined*, did not differ in appearance from the usual agitation froth at a *distance of a few feet.*" It is true that Higgins did not get as high recovery as did Byrnes, but that is beside the point. The point is, he admits that a mineralized froth was produced and a grade of concentrate which was 47.50% was obtained by the use of 3.6% straight cotton seed oil. Admitting that this froth was more oily than a froth produced with a small fraction of 1% of oil (as, of course, it must have been), and admitting his contention that the recovery when using 3.6% was less than when using a small fraction of 1%, the fact remains that he admits that froth concentration can be produced by using straight oils in quantities above 1% on the ore ; and this fact was before the Supreme Court when it condemned as too broad claims 9, 10 and 11.

The use of oil in excess of 1% on the ore has been, since the decision of the Supreme Court in the Hyde cases, regularly used at the Magna Mill of the Utah Copper Company, as testified to by Conrads (Tr., Vol. V., p. 2655, Q. 129, *et seq.)* ; at the Arthur plant of the same company, as testified to by T. A. Janney (Exhibit 30, Tr., Vol. IX., p. 4992 ; also Tr., Vol. V., p. 2549, Q. 34, *et seq.)* ; by the Chino Copper Company, as testified to by Wicks (Exhibit 26, Tr., Vol. IX., p. 4987 ; also Tr., Vol. V., p. 2415, *et seq.)*, and by the Ray Consolidated Company, as testified to by Engleman (Exhibit 44, Tr., Vol. IX., p. 5033 ; also, Tr., Vol. V., p. 2740, *et seq.)*. In each case the mill records of the plants, both before and after the use of oil above 1% on the ore was adopted as the regular mill practice, were produced. The

facts established by this testimony, in brief, are given in the foot-note to pages 49 to 51 of our brief.

Copies of this letter have been delivered to counsel for plaintiffs-appellees.

New York, April, 1918.

Very respectfully,

THOMAS F. SHERIDAN,
FREDERICK P. FISH,
J. EDGAR BULL,
J. BRUCE KREMER,
KURNAL R. BABBITT,
Counsel for defendant-appellant.

HON. ERSKINE M. ROSS, WILLIAM W. MORROW AND WILLIAM H. HUNT, JUDGES OF THE CIRCUIT COURT OF APPEALS FOR THE NINTH CIRCUIT.

Minerals Separation Ltd. et al. vs. Butte & Superior Mining Company—No. 3081.

Sirs:

Counsel for appellees in the above entitled case received at their offices in New York City, late on April 3rd, 1918, from counsel for appellant, a printed document, entitled "Oral Arguments for Appellant," with the notification that the document had been forwarded for filing some time more than a week earlier. This document contains a footnote to Mr. Bull's argument, found on pages 22 and 23, and occupying nearly two pages of fine print, which footnote presents discussion and argument, and attempts in effect to present evidence, respecting certain demonstrations made before Judges Morrow and Hunt during the forenoon of Monday, March 11th.

It will be recalled that when Judges Morrow and Hunt came to the Court Room at that time to see the demonstrations there was a discussion as to what should be permitted to be done. After lengthy argument the Judges finally determined that the only demonstrations they would permit would be reproductions of those made in the Court below and described in the record, and that there should be no debate, discussion or argument whatsoever in respect thereof, and no explanations beyond references to and

reading of the record. It will be instantly perceived that the footnote in question is in direct violation of the expressed determination and explicit direction of the Judges in this respect. We respectfully submit that the footnote should be wholly disregarded, but if for any purpose the footnote is considered, then we ask that the following reply be also considered.

The footnote deals first with three of appellees' eight demonstrations and secondly with appellant's two demonstrations.

The latter (i. e., the footnote as to appellant's demonstrations) may be briefly dismissed with the statement of the fact, as to the first one, that the "pine-tar oil" employed in the Court below was not defined there or described or analyzed by any of appellant's witnesses, nor was any evidence whatsoever given as to what it was or what it contained or whether it was a straight oil or a mixture. It was for this reason that plaintiffs paid no attention to this demonstration in the Court below and gave no evidence with respect to it. It meant nothing on any issue of the case. Visual inspection shows that the "pine-tar oil" employed is not pine oil, but beyond that we have no information nor has the Court. Under these circumstances the assumption of the footnote that "pine-tar oil" is a "straight oil" of the patent is wholly without any basis in the record. On the contrary, there is every probability that it is a composite in which oil of the patent constitutes but a small fractional part. The conclusions of the footnote

"this experiment proves," etc., and "this experiment also casts a weird light on," etc., have therefore not the slightest foundation.

The conclusions of the footnote based on the last three of appellees' demonstrations are equally unjustified. We will deal with them more in detail because the blunder in the observations of appellant's counsel on which those conclusions are based might not be entirely obvious to one who is not expert in recognizing the froth of the process in suit and in distinguishing it from spurious froths.

Mr. Bull and Mr. Fish were not of counsel for defendant at the time of the trial in the Court below, and neither one of them was present at any time during the trial, and neither one of them saw any of the demonstrations that were made during the trial or heard the oral evidence as it was given respecting them, and neither one of them took part in the oral argument below. Mr. Bull's first appearance in the case was on defendant's brief filed several weeks after the close of the trial, and Mr. Fish's first appearance in the case was on the brief for appellant in this Court. These gentlemen are not competent to determine from observation what is and what is not the froth of the patent in suit. Indeed, in one of appellees' demonstrations Mr. Bull saw the froth of the patent before any oil of any kind had been introduced. It was at the beginning of the first of the three experiments of appellees' that are discussed in the footnote. The Court will remember that Mr. Bull called attention to what he

thought was the froth of the patent, being a foam that appeared on the top after the preliminary mixing and before the addition even of the kerosene oil, and that he demanded that the operation be repeated for full observation, and only desisted when his attention was called to the fact that no oil of any kind had as yet been added. To his untrained and unaccustomed eye the metallurgically worthless foam that appeared at this time was the froth of the patent. Actual analysis in the laboratory or the determinative test of practical use in the mill at once distinguish between the real mineral-carrying froth of the patent and a spurious metallurgically useless foam, or spume, or magna. The experienced metallurgist, trained in this process in the mill, and the experienced mill man who has to do with it there, acquire remarkable skill in the recognition of the true mineral-carrying froth from its appearance to the eye and from its behavior. But to the unskilled eye of the layman the difference is not manifest and all foamy appearances look more or less alike, whether they be (1) metallurgically useless foams or froths containing both mineral and gangue together unconcentrated, or (2) metallurgically useless oil pastes or magmas inflated with air or gas, or (3) metallurgically useful mineral-carrying air froths.

As Mr. Kenyon said in oral argument to the Supreme Court in the Hyde case (pp. 89 and 90):

> "Mr. Justice McKenna: Your contention, then, is that the laboratory test is no standard?

Mr. Kenyon: Yes, sir; absolutely no standard whatever.

Mr. Justice McKenna: Do you admit that the laboratory tests show a similarity?

Mr. Kenyon: Yes. I cannot myself tell one float from another by visual observation, but the mill man will tell you the instant he tries to carry out the process in the mill. * * *

Mr. Justice McKenna: Are there any experiments on the other side showing more than the laboratory tests?

Mr. Kenyon: No, sir. They stop with laboratory tests. To-morrow you will see, but you will not know. The layman cannot tell the useful froth of the process in suit from a useless oil emulsion; whether it is a step in a real process of ore concentration or only a sham; whether it can be reproduced in the mill or not, or would treat or successfully concentrate ore. It is a situation for caution, especially as the Court below was misled by just such demonstrations."

This preceded the demonstrations that were made to the Supreme Court. Following those demonstrations the Court requested further oral argument, which was immediately had on the same day, each side being allowed a half hour for that purpose. These arguments were not recorded.

This Court in its decision in the Hyde case had said:

> "The evidence in the case, *together with the illustration thereof afforded by demonstrations of the various processes which were made in the aid of the argument before this Court, convince us that the froth in all these processses is the same,* with the exception that there is less oil (as there must necessarily be) in the appellees' froth than in the others. The froths are all similar in appearance, they all rise to the surface after the same amount of agitation, they all gather with equal efficiency the same quantity of metal, and all may be removed from the surface in the same way."

The "froths" here referred to were such as this Court believed were produced according to Haynes, Everson, Schwarz, Froment, Kirby (and even as a necessary incident of Cattermole) and the process in suit.

The Supreme Court held that these fundamental findings of fact were erroneous. It seems probable that the personal observations made by the Judges themselves in this Court in the Hyde case and the similarity in appearance of all the froths exhibited were considerable factors in misleading this Court then.

Now, the only statements of Mr. Bull's footnote that are material are the statements in each of the three cases that before the pine oil was added, and after agitation, "the Court observed that an excellent froth was produced" or

"an excellent and voluminous froth," and that after pine oil was added "the Court observed that *the same froth* as before was produced, but its amount was somewhat increased." What "the Court observed" is not, of course, for counsel to say. Regarding the statements, however, as statements of what counsel for appellant observed, those statements are not only wholly improper as an effort to introduce new evidence as to facts, a thing that had been explicitly forbidden beforehand by Judges Morrow and Hunt (in prescribing what should and what should not be exhibited, and what might be said and what should not be said with respect thereto), but those statements are wholly incompetent. For Mr. Bull to characterize what appeared after pine oil in each case was added as "the same froth as before" does not make it so or to the slightest degree assist the Court in reaching a just conclusion of the case. The Court below saw these particular demonstrations and many others and heard all the testimony of both sides with respect to them and with respect to the issuable fact to which they are addressed, namely, whether or not the petroleum products which constitute nine-tenths of appellant's oil mixture will in fact, if used alone, produce the metal-carrying froth and thereby achieve the ore-concentration process of the invention in issue. The Court below also had the benefit of seeing the actual operations in the mill. The appellant as defendant in the Court below saw, through its counsel and experts, these bar-mixer demonstrations that plaintiffs made and had

its opportunity to present with respect to them whatever fact and opinion evidence it desired. The materials used in these bar-mixer experiments at the trial were divided in open court and portions delivered to appellant's counsel and experts for examination and analysis, and Mr. Higgins testified that the foamy appearances produced when the petroleum products—the kerosene and the fuel oils—were used alone, were of no metallurgical value whatever, were metallurgically useless (Vol. 8, p. 4620, Q490; p. 4614, Qs460, 461; p. 4605, Q416), and that the result of the 25% kerosene oil experiment with .1% of pine oil added and of Mr. Phillips 25% alleged kerosene oil experiment was simply an inflated paste or magma (Vol. 8, pp. 4620-4621, Qs492-496). This testimony of Mr. Higgins was neither criticized nor contradicted by the witnesses for appellant who subsequently testified in surrebuttal. As to Mr. Higgins' qualifications in recognition and appraisal of mineral-carrying froths, it is undoubtedly true that no man is better qualified, and Mr. Bull very justly said in his oral argument that Mr. Higgins "knows as much about this subject as anybody in the world" (Mr. Bull's oral argument, p. 15).

Not only is this testimony of Mr. Higgins uncontradicted, but it is *confirmed by the operations of appellant in its mill.* Appellant, in its mill operations, treating an average of more than 1,500 tons of ore a day, uses pine oil (or occasionally creosote), and evidently is compelled to do so, and cannot run its mill with the cheap petroleum

products—fuel oil and kerosene—alone (Tables defendant's exhibits 159, 160, 161, 162, Vol. 9, pp. 5186-5195; Appellees' Main Brief, p. 16, Appellees' Supplemental Brief, p. 129, and footnote). The only effect of these products upon the process is to impair it, with the resultant loss of one million dollars a year of which appellant's counsel boast.

The personal observations of Mr. Bull and his conclusions from what he saw that "the same froth" was produced by the agitation both before and after the pine oil was added, and that "an excellent froth" or "an excellent and voluminous froth" (meaning a froth of the patent) was produced by the agitation before the pine oil was added, are not only improper either as evidence or as argument, but are wholly incompetent as evidence, and they are of as little real value to the Court as Mr. Bull's discovery of the froth of the patent before any oil of any kind had been introduced.

Undoubtedly an agitation can be made so excessively fierce that even with petroleum products alone, such as fuel oil or kerosene oil or both, some kind of a foamy effect can be produced such as would have to the eye of the unskilled layman a superficial resemblance to the metal-carrying and ore-concentrating froth of the patent in suit; but the evidence is clear that such foamy appearances are worthless, because they are not the mineral-carrying, ore-concentrating froth of the patent. And the bar-mixer with a high velocity such as employed in the

demonstrations in question (9,000 to 10,000 revolutions per minute) is well adapted for that purpose.

Mr. Bull's footnote begins with a criticism of the use of a bar-mixer as affording "no fair indication of what happens in commercial machines." This criticism does not deter Mr. Bull from immediately drawing elaborate conclusions from what he asserted happened in the bar-mixer demonstrations in question, to the effect that they completely disprove appellees' fundamental contentions in the case and verify appellant's contentions.

Passing that, it is a fact, perhaps not known to Mr. Bull, that bar-mixer demonstrations were first presented by the defendant, namely, the experiments of Mr. Phillips, to which experiments and the 72 photographs (Vol. 9, pp. 5068-5138) of the alleged froths obtained from them, so much time was given in the Court below—although no mention has been made in this Court of those demonstrations and photographs. Plaintiffs in rebuttal repeated one of these experiments of Mr. Phillips in order to check his results, and to that end employed the same bar-mixer that he had employed with the same enormously high rate of speed that he had employed. This was Mr. Phillips' 25% alleged kerosene oil alleged froth experiment (photographs 18-3, 18-2, 18-1, Vol. 9, pp. 5116-5118). The experiments and testimony relating to it are treated in appellees' Supplemental Brief, pp. 209-211, wherein it appears, first, that the kerosene oil used by Mr. Phillips contained pine oil, and, second, that with eight different

specimens of kerosene bought in the open market we were unable to produce the results obtained by Mr. Phillips, but that the addition of .1% of pine oil achieved those results. Mr. Phillips' experiment with 25% of alleged kerosene was thus shown to have been spurious.

To the skilled metallurgist the bar-mixer is useful as a laboratory apparatus for the purpose of making mere observation experiments. The device is not adapted to permit clean and complete separation of the froth followed by an assay to exactly determine its metal contents. Further, it requires a skilled observer to understand and interpret what is exhibited. But as appellant had used it we deemed it advisable, if not indeed necessary, to use it for our comparative froth experiments and for the magma-producing experiment with 25% of kerosene and .1% of pine oil, these experiments being performed and explained by a skilled observer, Mr. Higgins.

Mr. Bull, in his footnote, seeks to cure a fatal weakness in appellant's case as it stands on the record in the Court below. He seeks to do this by assertions with respect to the experiments done in this Court. It was not proved in the Court below that kerosene oil alone or fuel oil alone or the two together could produce useful mineral-carrying froth. The proof was to the contrary. Relying upon his assertions as to observations of the results of experiments in this Court, Mr. Bull argues that he has now supplied the evidence and proof appellant failed to produce in the Court below, and has now overcome and disproved the evidence

and proof to the contrary which the appellees produced in the Court below. The assertions built upon these observations are utilized as if they were new evidence here submitted which proved what the defendant below utterly failed to prove and disproved what the plaintiff below unquestionably proved.

Mr. Bull's footnote draws conclusions from his observations of the bar-mixer experiments made in this Court, but these conclusions fall with the blunders of observation on which they are based. This is not a case where mere observation can determine or decide such a question of fact as that. It is a case where the Court must have the aid and assistance of those who are skilled in the special matter involved. No more striking example of the danger of following any other course could be cited than the history of the Hyde case itself. In the instant case the Court below had the benefit of the expert evidence of Mr. Higgins to guide it in determining the particular issue of fact that Mr. Bull's footnote raises, and the defendant elected to let the record stand with that testimony of Mr. Higgins unshaken by cross-examination and uncontradicted by defendant's experts who testified in surrebuttal. Moreover, the findings of fact by the Court below that the petroleum-products constituent of appellant's mixture would not, if used alone, cause the oil-coated mineral particles of the pulp to form into a froth, did not depend upon these particular bar-mixer experiments, but upon a great body of proof on that subject, supported by assays

and figures and evidence of daily experiences and results in the mills, which led the Court below to find as a matter of fact, on the testimony of witnesses on both sides, that those constituents of defendant's mixture lacked the bubble-making quality and would not upon agitation cause the oil-coated mineral particles to form into the mineral-carrying, ore-concentrating froth of the patent. This testimony is discussed in appellees' Main Brief at page 40, in appellees' Supplemental Brief at page 126, and in Mr. Kenyon's Oral Argument at page 28.

It would seem as if the whole subject of the footnote could be disposed of by one determining consideration. Did the parties reproduce exactly the experiments as they were done in the Court below? If not, then they must be entirely disregarded, because the Court avowedly was not opening the case for new proof. If these experiments were exact reproductions of what was done in the Court below, then this Court must go to the record of the experiments as done below to ascertain the proof with respect thereto.

For the convenience of the Court the summary description of appellees' demonstrations which was handed to the Court at the time of the experiments, with references to the Record, are repeated on the following page.

APPELLEES' DEMONSTRATIONS.

1. Vanning or Shaking Table Operation—Wet Concentration—no oil.

 Higgins, Vol. 8, page 4467, Qs. 38-40.

2. Everson Second Method.

 Higgins, Vol. 8, page 4473, Qs. 57-60.

3. Kirby Process.

 Higgins, Vol. 8, pages 4503-4508, Qs. 195-218.

4. Patent in Suit and Cattermole.

 Higgins, Vol. 8, pages 4747, 4748, Qs. 84-86; pages 4749, 4750, Qs. 91-100.

5. Solution Patent No. 962,678.

 Higgins, Vol. 8, pages 4599-4601, Qs. 385-395.

6. Kerosene not a mineral frothing agent—addition of pine oil produces a mineral froth.

 Higgins, Vol. 8, pages 4603-4605, Qs. 409-419.

7. Mixture of Jones Oil and Kerosene not a mineral frothing agent—addition of pine oil produces a mineral froth.

 Higgins, Vol. 8, page 4606, Qs. 423-426; page 4611, Qs. 444-447; pages 4613-4615, Qs. 458-465.

8. 25% Kerosene oil experiment—Addition of pine oil produces an aerated magma.

 Higgins, Vol. 8, pages 4619-4621, Qs. 487-496.

The oral argument of Mr. Fish as printed, when compared with the stenographer's report furnished by the Court Reporter, shows that he has practically rewritten the entire address. As printed it is in reality an additional brief submitted by Mr. Fish in place of the oral argument he made in court. Among the numerous omissions we select the following for illustration. He said:

> "I do not care what else there is in the process; as a matter of fact there is not much else except the agitation to the same extent that they had in Cattermole, or a little greater—no, the same extent they had in Cattermole, for I think my brother is right in it; when the Supreme Court spoke of the agitation here as being unusual, they meant unusual as compared with Froment, as compared with Kirby, as compared with Everson; they did not mean unusual as compared with Cattermole, because the record would not justify it. I think that is right."

In his printed statement he does not include this or any paraphrase or restatement thereof. This statement should appear on page 23 of Mr. Fish's printed argument after the words, "Now, let us stop there for a moment," but it has been entirely elided.

Printed copies of this letter are this day delivered to J. Edgar Bull, Esq., of counsel for appellant, and mailed to all other counsel for appellant.

New York, N. Y., April 9, 1918.

Very respectfully,

HENRY D. WILLIAMS,
WM. HOUSTON KENYON,
LINDLEY M. GARRISON,
GARRET W. MCENERNEY,
ODELL W. MCCONNELL,
Counsel for Appellees.

1/30

No. 3082

United States

Circuit Court of Appeals

For the Ninth Circuit.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Appellants,

vs.

H. E. ELLIS,

Appellee.

Transcript of Record.

Upon Appeal from the United States District Court for the Territory of Alaska, Third Division.

FILED
MAR 21 1918
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Filmer Bros. Co. Print, 330 Jackson St., S. F., Cal.

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[Clerk's Note: When deemed likely to be of an important nature, errors or doubtful matters appearing in the original certified record are printed literally in italic; and, likewise, cancelled matter appearing in the original certified record is printed and cancelled herein accordingly. When possible, an omission from the text is indicated by printing in italic the two words between which the omission seems to occur.]

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In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH, and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Names and Addresses of Attorneys of Record.

DONOHOE & DIMOND, Valdez, Alaska.
For Plaintiffs and Appellants.
L. V. RAY, Seward, Alaska.
For Defendant and Appellee. **[2*]**

Filed in the District Court, Territory of Alaska, Third Division. Sep. 15, 1917. Arthur Lang, Clerk. By John B. Miller, Deputy.

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

*Page-number appearing at foot of page of original certified Transcript of Record.

Bill of Exceptions.

Come now the above-named plaintiffs, and, being about to appeal to the United States Circuit Court of Appeals for the Ninth Circuit from the order, judgment and decree made and entered by the above-named District Court in the above-entitled cause on the 28th day of August, 1917, do pray an order of said District Court, or of the Honorable Fred M. Brown, Judge thereof who made and rendered said order judgment and decree aforesaid, that this bill of exceptions containing the following named papers, pleadings, proceedings and exceptions in said cause be filed, settled and certified to as said plaintiffs' bill of exceptions upon said appeal to the said United States Circuit Court of Appeals, to wit:

1. Plaintiffs' complaint.
2. Defendant's motion to dismiss complaint.
3. Order denying defendant's motion to dismiss complaint.
4. Defendant's answer, complete except that it contains, not *verbatim*, but by reference to the printed record in cause No. 2758 of the United States Circuit Court of Appeals for the Ninth Circuit, the copies of pleadings in cause No. 721 of the said District Court mentioned in the third paragraph of the third affirmative defense of said answer, to wit:
 1. Complaint.
 2. Defendant's motion to strike portions of Complaint.

3. Order of Court denying motion to strike portions of complaint.
4. Demurrer of defendant.
5. Minute order of Court overruling demurrer of defendant.
6. Answer.
7. Motion to strike portions of answer.
8. Order of Court on plaintiffs' motion to strike.
9. Reply.
10. Findings of fact and conclusions of law. [3]
11. Decree dated October 16, 1915.
12. Petition for appeal.
13. Order allowing appeal.
14. Assignment of errors.

5. Plaintiff's reply to said answer.
6. Motion of defendant to invoke question of *res judicata* raised by said answer.
7. Opinion of District Court on question of *res judicata.*
8. Order, judgment and decree of said District Court, made, rendered and entered on the 28th day of August, 1917, and entered at large in Court Journal No. S–2, page 219, sustaining plea of *res judicata* and dismissing the above-entitled cause.
9. Opinion of the United States Circuit Court of Appeals for the Ninth Circuit, rendered September 15, 1916, in cause No. 2758 of said Court, being the cause entitled, "H. E. Ellis, Appellant, vs. Geo. C. Treat, Edmund

Smith and Logan Archibald, Appellees," and printed and appearing in Volume 236, Federal Reporter, pages 120, 121, 122, 123 and 124.

10. The printed record of the said United States Circuit Court of Appeals for the Ninth Circuit in cause No. 2758 of said Court, being the cause entitled, "H. E. Ellis, Appellant, vs. Geo. C. Treat, Edmund Smith and Logan Archibald, Appellees," consisting of 377 printed pages, the said record being the record of the appeal taken from the judgment and decree rendered by the above-named District Court on October 16, 1915, in Cause No. 721 of said District Court, being that cause entitled, "Geo. C. Treat, Edmund Smith and Logan Archibald, plaintiffs, vs. H. E. Ellis, defendant."
11. Order extending time to prepare, settle and file bill of exceptions until September 27, 1917.

True, full and correct copies of all of which said papers, pleadings and proceedings are hereto attached and are, by reference, here inserted in this bill of exceptions.

And the said plaintiffs and each of them do except to the said order, judgment and decree of the said District Court, made and entered as aforesaid on the 28th day of August, 1917, in this cause, sustaining that portion of said defendant's answer which set up as a defense to plaintiffs' complaint a plea of former adjudication of the same subject matter between the same parties, and adjudging and decree-

ing such defense to be a complete and absolute bar and defense to the matters and things alleged in plaintiff's complaint, and further adjudging and decreeing that plaintiffs' said complaint does not state facts sufficient to constitute a cause of action, **[4]** and dismissing the above-entitled cause on the grounds mentioned. The said order, judgment and decree was entered at large in Court Journal No. S–2, at page 219, of the Journal of the above-entitled court, and now appears therein.

And plaintiffs pray that the said order, judgment and decree of said District Court be reversed.

Dated this 15th day of September, 1917.

DONOHOE & DIMOND.
LYONS & ORTON.
SMITH, FOSTER & WORTHINGTON. **[5]**

In the District Court of the Territory of Alaska, for the Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Complaint.

Come now the above-named plaintiffs, and for cause of action against the defendant allege as follows:

I.

That during all of the times herein mentioned, the plaintiffs were citizens of the United States, each over the age of twenty-one years.

II.

That on or about the 5th day of June, 1909, the defendant was the sole owner, subject to the paramount title of the United States, and a certain lien thereon, held by the plaintiffs George C. Treat and Edmund Smith, of those certain eight (8) lode mining claims situated on the northerly side of Valdez Bay between Gold Creek and Shoup's Bay, in the Valdez Recording Precinct, Territory of Alaska, and named and described as follows, to wit:

The Mystic No. 1 lode claim, notice of location of which is of record in Book K of Mining Locations, at page 506, of the records of said Valdez Recording Precinct, at Valdez, Alaska.

The Mystic No. 2 lode claim, notice of location of which is of record in said Book K, at page 505, of said records.

The Mystery No. 1 lode claim, notice of location thereof being recorded in Book O of Mining Locations, page 452, of said records. **[6]**

The Mystery No. 2 Lode claim, notice of location thereof being recorded in said Book O, at page 453, of said records.

The Mystery No. 3 Lode claim, notice of location thereof being recorded in said Book O, at page 605 of said records.

The Parallel No. 11 lode claim, notice of loca-

tion thereof being of record in said Book O, at page 607 of said records.

The Parallel No. 2 Lode claim, notice of location thereof being of record in said Book O, at page 606, of said records.

The High Bar Lode claim, notice of location thereof being of record in said Book O, at page 451, of said records.

III.

That at said time said lode mining claims were undeveloped and unimproved, and the value of the same was wholly speculative and problematical, and their real value could be determined only by the expenditure of large sums of money and a great amount of labor; that plaintiffs Treat and Smith and defendant expended large sums of money in the exploration, development and improvement of said claims, and have done and performed a large amount of labor thereon, since the plaintiffs went into possession of said claims on the 5th day of June, 1909, as hereinafter alleged.

IV.

That on said 5th day of June, 1909, the defendant was indebted to the plaintiffs Treat and Smith in the sum of Eight Hundred Dollars ($800) and said plaintiffs Treat and Smith at said time held valid and subsisting liens upon all of said mining claims and on other property belonging to defendant, as security for the payment of said sum of Eight Hundred Dollars ($800); also an equitable one-fifth (1/5) interest in and to said mining claims, which said equitable interest was evidenced by a certain

written contract made and entered into by and between the plaintiffs, Treat and Smith, and said defendant, dated July 9th, 1908, and was duly acknowledged and witnessed, and thereafter recorded in [7] the office of the United States Commissioner, *ex-officio* recorder, at Valdez, Alaska.

That it was then and there, on the 5th day of June, 1909, agreed orally between the plaintiffs Treat and Smith and the defendant, that the defendant would by a valid deed of conveyance, grant and convey to said Treat and Smith an undivided one-fifth interest in and to all of said mining claims, and that in consideration of said conveyance by said defendant, said plaintiffs Treat and Smith would cancel said indebtedness of $800.00 and release defendant from any liability to pay the same or any portion thereof, and would discharge said liens and equitable interest which they then held against said mining claims and other property belonging to defendant as security for the payment of said $800.00; that it was agreed by the parties to said oral contract that the same should be performed immediately after its terms as above stated had been agreed upon by the parties thereto; that all of the terms of said contract were agreed upon by the parties thereto on the said 5th day of June, 1909; that said sum of $800.00 was the fair and reasonable value of said one-fifth interest in and to said mining claims at the date of said oral contract. That plaintiffs Treat and Smith immediately thereafter performed their part of said contract by them and there cancelling said indebtedness of $800.00, and releasing defend-

ant from any liability to pay the same or any portion thereof, and by discharging said liens and equitable interest in and on said mining claims and other property belonging to defendant, which they held as security for the payment of said $800.00 as aforesaid; that the defendant thereupon and immediately after said performance of said contract by the plaintiffs Treat and Smith, as aforesaid, under and by virtue of said oral contract, delivered the possession of said mining claims to said Treat and Smith, jointly with said defendant, and said plaintiffs Treat and Smith then and there went into possession of said mining claims jointly with said defendant under said oral contract, and the said plaintiffs Treat and Smith have ever since been and now [8] are in the possession of the same jointly with the defendant, under said contract.

V.

That plaintiffs Treat and Smith, during the time they have been in possession jointly with the defendant of said mining claims, under said contract as aforesaid, have aided and assisted defendant in making extensive and permanent improvements on said mining claims in the form of a dock, warehouse, stamp-mill, hoists, boarding-house, and other improvements now situated upon said mining claims, and in purchasing tools which have been and now are being used in the development of said mining claims, all at a cost and expense and of the value of $50,000.00; that plaintiffs Treat and Smith paid one-fifth (1/5) of said cost and expense, or the sum

of $10,000.00, the same being their proportionate part of said $50,000.00.

VI.

That plaintiffs Treat and Smith, during the time that they have been in joint possession with defendant of said mining claims under said contract, as aforesaid, have paid more than $250.00 as cost and expense of preserving said property and of the cost and expense of protecting plaintiff's and defendant's title thereto in litigation where the same was attacked by other parties, said $250.00 being the *pro rata* share of said plaintiffs Treat and Smith, of the entire expense of preserving said property and protecting and defending plaintiffs and defendants.

VII.

That the plaintiffs Treat and Smith, during the time they have been in joint possession with defendant of said mining claims as aforesaid, have paid their *pro rata* share of the cost and expense of making a permanent survey of said mining claims for the purpose of enabling plaintiffs Treat and Smith and defendant to secure United States patent thereto; that said proportion of said expense is in excess of $200.00. [9]

VIII.

That on or about the 23d day of July, 1909, defendant declared that plaintiffs Treat and Smith were the owners of an undivided one-fifth interest in and to said mining claims, and that he, said defendant, held the legal title for said interest in said mining

claims in trust for plaintiffs Treat and Smith; that such declaration was made by said defendant by a certain conveyance or instrument in writing, subscribed by the defendant and duly and properly acknowledged and witnessed so as to entitle it to be recorded, and thereafter said conveyance or instrument was recorded in the office of the United States Commissioner and *ex-officio* recorder at Valdez, Alaska.

IX.

That since said 5th day of June, 1909, the defendant has held the naked legal title to said undivided one-fifth interest in and to each of said mining claims, but has held said title during all of said time between said 5th day of June, 1909, and the 3d day of January, 1913, in trust for plaintiffs Treat and Smith, and has held said title since said 3d day of January, 1913, and now holds said title in trust for all of the plaintiffs herein, and that plaintiffs Treat and Smith have been at all times between said 5th day of June, 1909, and the 3d day of January, 1913, the owners of and entitled to the possession of an undivided one-fifth (1/5) interest in and to each and all of said mining claims, and that all of the plaintiffs herein, ever since said 3d day of January, 1913, have been and now are the owners and entitled to the possession of said one-fifth interest in and to each and all of said mining claims.

X.

That on or about the 3d day of January, 1913, plaintiff Logan Archibald purchased from the plaintiff Edmund Smith an undivided one-half interest

in Smith's interest in and to each and all of said mining claims, and in and to the machinery and [10] improvements placed thereon, and plaintiff Archibald is now and ever since said 3d day of January, 1913, has been the owner of an undivided one-half of the interest formerly owned by said Smith, which was acquired by said Smith as hereinbefore alleged.

XI.

That notwithstanding the facts as hereinbefore alleged, the defendant, in fraud of the rights of these plaintiffs, refuses to deed or convey to these plaintiffs said undivided one-fifth interest in and to said mining claims.

XII.

That since on or about August 15th, 1915, defendant has been operating and working said mining claims, and plaintiffs are informed and believe, and therefore allege, has extracted therefrom a large amount of gold of the value of $100,000.00, but defendant has failed, neglected and refused, and still fails, neglects and refuses to account to the plaintiffs for their said one-fifth interest or any interest therein, and said defendant has kept and retained and still keeps and retains the same and the whole thereof.

XIII.

The plaintiffs are entitled to an accounting from said defendant for the value of the gold, metals, and other minerals, which said defendant has extracted or taken from said mining claims since the 15th day of August, 1915.

XIV.

That plaintiffs have no speedy, complete or adequate remedy at law.

WHEREFORE, plaintiffs pray the Court for judgment against the defendant as follows:

1st. That plaintiffs are the owners of an undivided one-fifth interest in and to each and all of said lode mining claims, and all of the improvements thereon, and that the defendant holds the legal title for their interest in said lode mining [11] claims in trust for the plaintiffs.

2d. That the defendant be compelled to specifically perform said oral contract of June 5th, 1909, by making, executing and delivering to plaintiffs a valid deed of conveyance, granting and conveying to them an undivided one-fifth interest in and to each and all of said mining claims, and all the improvements thereon.

3d. That the defendant account to plaintiffs for one-fifth of all the gold, metals and minerals taken or extracted from said lode mining claims since said 15th day of August, 1915.

4th. That plaintiffs have such other and further relief as to the Court may seem just and equitable, and for their costs and disbursements herein.

DONOHOE & DIMOND.
LYONS & ORTON.
SMITH, FOSTER & WORTHINGTON.

United States of America,
Territory of Alaska,
Valdez Precinct,—ss.

Anthony J. Dimond, being duly sworn, says:

That I am one of the attorneys for the plaintiffs in the above-entitled action; that said plaintiffs are temporarily absent from Valdez, Alaska, the place where affiant resides, and has his office; that affiant has read the foregoing complaint and understands the same, and the same is true to the best of his knowledge, information and belief. That affiant makes this verification of said complaint on account of the absence of all of said defendants from the from the territory of Alaska.

ANTHONY J. DIMOND.

Subscribed and sworn to before me this 8th day of February, 1917.

JOHN LYONS,
Notary Public for Alaska.

My commission expires Nov. 27, 1920. [12]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Motion to Dismiss Complaint.

Comes now the defendant above named, by his counsel, L. V. Ray, and moves the above-entitled

Court to enter its order herein dismissing the complaint of plaintiff, and for cause therefor showeth:

I.

That it appears from the records and files of the above-entitled court in the case of George C. Treat, Edmund Smith and Logan Archibald, Plaintiffs, vs. H. E. Ellis, Defendant, being cause No. 721 on the docket of said court, filed in the above court May 4th, 1915, that in such litigation the same parties were litigants, the subject matter was the same, the relief sought practically identical with the subject matter and relief sought in the case at bar, to wit: No. 879 on the docket of said court.

II.

It appears from the records and files of the above-entitled court in said cause No. 721 that pursuant to the mandate of the United States Circuit Court of Appeals for the Ninth Circuit, which said mandate was filed in the office of the clerk of court of the Third Division of the Territory of Alaska, on December 20th, 1916, judgment on the 10th day of March, 1917, was in said cause entered dismissing the cause with costs to defendant therein. [13]

III.

That the complaint in cause No. 879 between the same parties, concerning the same subject matter, seeking relief nearly identical with that sought in the former action is an attempt to relitigate questions of law and fact already finally determined and passed upon by the Appellate Court.

IV.

That the judgment of this Court rendered on

March 10th, 1917, in said cause No. 721, is a bar to the present action, which seeks to again litigate the subject matter in controversy upon points finally determined by a court of competent jurisdiction, as well as to those points which might have been raised in the trial of said former action.

V.

That by reason of the final determination of said former suit in equity adverse to them, the plaintiffs are estopped from again seeking to establish in a subsequent suit the rights claimed by said plaintiffs therein.

VI.

That the counsel for respective parties have stipulated with reference to the motion now made that counsel for defendant be not required to set forth *in extenso* the pleadings making up the judgment-roll in said cause No. 721, but that the Court under the principle of taking judicial knowledge of its own records may consider and deem a part of this motion such matters and pleadings as make up said judgment-roll in cause No. 721.

WHEREFORE, the defendant asks the Court to rule [14] the former action to be a bar to the subsequent action now instituted, and that a judgment of dismissal be entered as against said plaintiffs.

L. V. RAY,
Attorney for Defendant.

Receipt of copy of above motion acknowledged this 27th day of April, 1917.

ANTHONY J. DIMOND,
Of Counsel for Plaintiffs.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division. Apr. 27, 1917. Arthur Lang, Clerk. [15]

In the District Court for the Third Judicial Division, Territory of Alaska.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Order Denying Defendant's Motion to Dismiss Complaint.

Defendant's motion for dismissal of plaintiff's complaint, heretofore filed herein, having come regularly on for hearing this tenth day of May, 1917, and both parties being represented in court by their respective counsel of record, and the said counsel for both plaintiffs and defendant having stipulated in open court to waive oral argument in respect to the said motion, and the Court being fully informed and advised;

IT IS HEREBY ORDERED, that defendant's motion be, and it hereby is, denied; and, further, that defendant may be, and he hereby is, allowed an additional ten days' time dating from and exclusive of the date of this order, in which to file his answer in this cause.

To which said order defendant is herewith allowed an exception.

WITNESS the hand of the Honorable FRED M. BROWN, this tenth day of May, 1917, A. D.

FRED M. BROWN,
Judge.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division. May 10, 1917. Arthur Lang, Clerk. By Chas. A. Hand, Deputy.

Entered Court Journal No. 11, page No. 250. **[16]**

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Answer.

Comes now the above-named defendant and answering to several paragraphs in plaintiff's complaint contained, paragraph by paragraph, admits, alleges and denies as follows:

I.

Defendant admits the allegations contained in paragraph I of plaintiff's complaint.

II.

Defendant admits that on June 5, 1909, he was, subject to the paramount title of the United States, the sole owner of and in actual possession of those certain eight (8) lode mining claims specifically described in paragraph II of plaintiffs' complaint; but denies that plaintiffs then held, or ever held, a valid lien on said mining claims.

III.

Defendant denies each and every allegation contained in paragraph III of the plaintiffs' complaint, save and except, that defendant admits that he expended large sums of money in the exploration, development and improvement of said mining claims and has done and performed a large amount of labor thereon since the 5th day of June, 1909, but specifically denies that the plaintiffs, Treat and Smith, have expended large [17] sums of money in the exploration, development and improvement of said claims and have done and have performed a large amount of labor thereon since the 5th day of June, 1909, or at all.

IV.

Defendant denies that on the 5th day of June, 1909, he was indebted to the plaintiffs, Treat and Smith, in the sum of Eight Hundred Dollars ($800), but admits there was a balance in the sum of Five Hundred Dollars ($500) due such plaintiffs for funds advanced during the month of May in the year 1907, for certain specified purposes; and denies that plaintiffs, Treat and Smith held a valid and subsisting lien, or at all, upon said mining claims of defendant

as security for the payment of any such indebtedness. Defendant denies that on July 9th, 1908, or at any other time, he entered into a written contract which purported or intended to convey to plaintiffs Treat and Smith an equitable one-fifth (1/5) interest in and to said mining claims; and, further answering the allegations contained in paragraph IV of plaintiffs' complaint, defendant denies that he did, on the 5th day of June, 1909, or at any other time whatsoever, agree orally with plaintiffs Treat and Smith that said defendant would convey to such plaintiffs an undivided one-fifth interest, or any interest whatsoever, in and to said mining claims; and, defendant alleges that on June 5th, 1909, the defendant and the plaintiffs Treat and Smith, as parties of the first part, entered into a certain contract with one, A. J. Crane, as party of the second part, wherein said first parties agreed to lease to said second party all of said mining claims for a period of six years; that during the negotiations preceding the signing of said [18] agreement to lease, such plaintiffs proposed in writing to defendant that if said defendant would execute such proposed Crane contract, so designating the same, such plaintiffs, namely, Treat and Smith, would agree to accept and would accept in full payment of all claims and demands by them held against the defendant for and on any account, fifteen per centum (15%) net out of the royalty to be derived from said proposed Crane lease and to be paid by the said lessee to first parties; that such offer was agreed to by and accepted by defendant, and the said Crane contract executed by defendant,

and the said plaintiffs Treat and Smith, thereupon released the defendant from any and all debts and obligations whatsoever then due and owing from defendant to such plaintiffs, for the consideration aforesaid; and, further answering defendant, denies that the sum of eight hundred dollars was a fair and reasonable price or value for an undivided one-fifth interest in said mining claims as said plaintiffs Treat and Smith well knew.

Defendant further answering the allegations in paragraph IV of plaintiff's complaint, denies that he did, at any time, or at all, deliver possession to said plaintiffs Treat and Smith of said mining claims, and denies that such plaintiffs have ever been in actual or constructive possession of the same, either jointly with this defendant, or at all; and denies that the said plaintiffs Treat and Smith ever have been, or now are, either jointly with the defendant, or at all, in possession of said mining claims.

V.

Answering paragraph V of plaintiffs' complaint, the defendant denies the same and each and every allegation therein contained. [19]

VI.

Answering paragraph VI of plaintiffs' complaint, defendant denies that plaintiffs Treat and Smith have been in joint possession with defendant of said mining claims hereinbefore referred to; and, denies that such plaintiffs have advanced any sums of money whatsoever in payment of legal expenses or for other cause, in protection of the title to said mining claims, but alleges the fact to be that such plain-

tiffs, by virtue of the agreement hereinbefore stated in paragraph IV of this answer, were entitled to receive fifteen per centum, net, of the royalty derived from the said lease, and that such plaintiffs did so receive such net percentage in conformity with the agreement therefor.

VII.

Answering paragraph VII of plaintiffs' complaint, defendant denies the same and each and every allegation therein contained.

VIII.

Answering paragraph VIII of plaintiffs' complaint, defendant denies that he did, on the 23d day of July, 1909, or at any other time, state or declare that the plaintiffs Treat and Smith were the owners of an undivided one-fifth interest in and to said mining claims; and denies that defendant then, or at any other time, stated or declared that he held the legal title for said interest in trust for the plaintiffs Treat and Smith; but alleges that on July 23d, 1909, defendant and said plaintiffs as first parties and B. F. Millard as second party, entered into a certain contract in writing, wherein first parties leased to second party said mining claims for a period of six years; that [20] in said lease agreement this defendant, in the introductory part thereof containing a description and designation of the parties to such instrument, was named as "four-fifths owner," and the plaintiffs Treat and Smith were described as "each owning ten (10) per cent" of said mining claims; that said contract was entirely prepared by one of the plaintiffs herein, to wit: Edmund Smith,

an attorney at law, and then acting as such for the defendant, and counselling and advising said defendant in all matters pertaining to said mining claims; that at the time of and before signing the said Millard contract or lease the defendant objected to the language in said instrument contained purporting to state ownership of any portion of said property in Treat and Smith, but the defendant was informed and told by the plaintiff Smith, then so acting as advisor and counsellor for the defendant as aforesaid, that such phrasing and wording was not intended to convey an idea of co-ownership in the plaintiffs Smith and Treat, but was only necessary for the reason that the said Smith would *thereby better* enabled to represent the interests of defendant in the capacity of defendant's attorney, during the then proposed absence of defendant.

IX.

Answering paragraph IX of plintiffs' complaint, defendant admits that since the 5th day of June, 1909, he has held the legal title to said claims, but denies that he has held such title, or any part or interest therein, in trust for any or all of the plaintiffs herein, and denies that plaintiffs, or either or any of them, have or had any lawful claim or demand either at law or in equity to an interest in and to said claims, as more fully appears by the third affirmative defense hereinafter pleaded by defendant, wherein [21] defendant sets up as a defense to this action that plaintiffs are estopped from instituting and prosecuting the same by reason of a former judicial adjudication between the same parties and

concerning the same subject matter, being cause No. 721 on the docket of this court, hereto finally determined in favor of defendant and against said plaintiffs after a hearing upon the merits upon appeal in the United States Circuit Court of Appeals for the Ninth Circuit, as more fully appears by the judgment, pursuant to mandate, of the Appellate Court, entered in the District Court for the Territory of Alaska, Third Division, in said cause No. 721, on March 10th, 1917.

X.

That defendant understands said plaintiff Smith has made a certain purported conveyance to the plaintiff Logan Archibald, but denies that said plaintiff Archibald, by reason of such conveyance, acquired any right, title or interest in and to the mining claims and improvements thereon, owned by defendant solely as aforesaid, and denies that the said Archibald now has any right, title or interest therein, either at law or in equity.

XI.

Answering paragraph XI of said complaint, defendant admits that he has refused and stil continues to refuse to deed or convey to said plaintiffs an undivided one-fifth interest in and to said mining claims, or any interest whatever; and denies that such refusal is in fraud of the rights of the plaintiffs.

XII.

Answering paragraph XII of said complaint, defendant admits that he has been operating said mining claims and reducing to commercial values the ore

extracted therefrom, [22] but denies that he has extracted therefrom gold to the value of one hundred thousand dollars, and alleges that pursuant to an order of the District Court for the Territory of Alaska, Third Division, to which order defendant duly excepted, and which exception was by the Court allowed, the defendant has deposited in the registry of the court the sum of three thousand one hundred sixteen and forty-two one-hundredths ($3,116.42) dollars; and defendant denies each and every allegation in said paragraph contained other than those allegations in this paragraph hereinbefore specifically denied.

XIII.

Defendant denies each and every allegation contained in paragraph XIII of plaintiff's complaint.

XIV.

Answering paragraph XIV of plaintiffs' complaint, defendant admits that on the 8th day of February, 1917, the date of filing complaint herein, plaintiffs had no complete and adequate remedy at law, but alleges that plaintiffs' cause of action at law, of any such cause of action existed, accrued more than six years prior to the date of commencement of the action at bar, and plaintiffs are estopped by virtue of the provisions of section 838 of the Compiled Laws of the Territory of Alaska to institute such action after the expiration of the statutory period of limitations.

That defendant, for a further answer, and as a FIRST AFFIRMATIVE DEFENSE to the cause

of action alleged in the complaint of plaintiffs alleges:

I.

That the complaint of plaintiffs herein fails to allege any matter of equity entitling the plaintiffs to the [23] relief prayed for therein; and particularly that the cause of action attempted to be set forth in said complaint did not accrue within seven years before the commencement of said action in that this defendant has been for more than seven years last past in the actual, continuous, open, notorious and uninterrupted adverse possession of said mining claims described in plaintiffs' complaint under claim and color of right and title, subject only to the paramount right of the United States in and to the same.

That defendant, for a further answer and as a SECOND AFFIRMATIVE DEFENSE to the cause of action alleged in the complaint of plaintiffs, alleges:

I.

That the complaint of plaintiffs herein fails to allege any matter of equity entitling the plaintiffs to the relief prayed for therein; and particularly, that the cause of action stated in paragraph IV of said complaint, and as therein alleged, is based upon an oral contract concerning an estate or interest in real property or an alleged trust or power concerning such real property, in contravention to the provision of Section 1878 of the Compiled Laws of the Territory of Alaska; and alleges that said plaintiffs have no estate or interest in said mining claims, nor does defendant hold any estate or interest in said mining

claims in trust for the benefit of said plaintiffs, which has been created, transferred or declared by a conveyance or other instrument in writing subscribed by the defendant, or by any lawful agent of defendant under written authority therefor, and executed with such formalities as are required by law. [24]

And the defendant, for a further answer, and as a THIRD AFFIRMATIVE DEFENSE to the cause of action alleged in the complaint of plaintiffs, alleges:

I.

That the complaint of plaintiffs herein fails to allege any matter of equity entitling the plaintiffs to the relief prayed for therein; and particularly, that on May 4th, 1915, in the District Court for the Territory of Alaska, Third Division, the said George C. Treat, Edmund Smith and Logan Archibald, as plaintiffs, said Treat, Smith and Archibald, being the same and identical persons as the plaintiffs in the suit at bar, filed in the said court their complaint against H. E. Ellis, as defendant, he being the same and identical person designated as defendant in this present action, in cause No. 721, on the docket of said court, said court being a court of competent jurisdiction, and by proceedings thereafter had in said cause, did acquire and have jurisdiction of the parties and of the subject matter of said action; that said cause No. 721 was between the identical and same parties as the action at bar, concerning the same subject matter, and in which former action all the matters and issues presented in the pres-

ent action were pleaded and determined; and in which said action on March 10th, 1917, a final decree was rendered upon the merits of said cause and duly entered determining said cause in favor of the defendant, H. E. Ellis, and against the plaintiffs, George C. Treat, Edmund Smith and Logan Archibald, and dismissing said cause, pursuant to mandate therefor issued out of the United States Circuit of Appeals for the Ninth Circuit, the same being the Appellate Court which has and had competent jurisdiction, as by law provided, to hear and to determine appeals [25] prosecuted from the District Court for the Territory of Alaska, Third Division; all of which more fully hereinafter appears.

II.

That by virtue of said former adjudication and final determination so based upon such final decree so rendered upon the merits as aforesaid between the same parties concerning the same subject matter, by such court of competent jurisdiction, plaintiffs ought not to be permitted to further prosecute the action at bar against said defendant and are precluded therefrom.

III.

That attached to this answer and by reference thereto hereby made a part hereof, are copies of the following pleadings in said cause No. 721, upon the docket of this court, consisting of:

1. Complaint.
2. Defendant's motion to strike portion of complaint.

3. Order of Court denying motion to strike portions of complaint.
4. Demurrer of defendant.
5. Minute order of court overruling demurrer of defendant.
6. Answer.
7. Motion to strike portions of answer.
8. Order of court on plaintiffs' motion to strike.
9. Reply.
10. Findings of fact and conclusions of law.
11. Decree dated October 16, 1915.
12. Petition for appeal.
13. Order allowing appeal.
14. Assignment of errors.
15. Mandate of the United States Circuit Court of Appeals for the Ninth Circuit.
16. Judgment pursuant to mandate, dated March 10, 1917.

WHEREFORE: This defendant, having fully answered plaintiffs' complaint herein and having shown matters in defense of said suit, which this defendant asks may be declared and held to be a complete bar to the relief asked for therein, this defendant prays: [26]

1. That a judgment may be entered dismissing said complaint, with costs against the plaintiffs.

2. For such other and further relief as may be just and equitable in the premises.

L. V. RAY,
Attorney for Defendant.

United States of America,
Territory of Alaska,—ss.

H. E. Ellis, being first duly sworn, deposes and says: That he is the defendant in the above-entitled action; that he has read the above and foregoing answer, knows the contents thereof, and that he believes the same to be true.

H. E. ELLIS.

Subscribed and sworn to before me this 7th day of June, A. D. 1917.

[Seal] FRANK J. HAYES,
Notary Public in and for the Territory of Alaska,
My Commission expires May 19, 1921.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division. Jun. 7, 1917. Arthur Lang, Clerk. By Chas. A. Hand, Deputy. [27]

In lieu of the pleadings in Cause No. 721 mentioned in paragraph 3 of the third affirmative defense in the foregoing answer, reference is hereby made, in accordance with the stipulation between plaintiff and defendant, to the several pages of the printed record in Cause No. 2758 of the United States Circuit Court of Appeals for the Ninth Circuit wherein such pleadings mentioned in said paragraph 3 of said affirmative defense all appear and all of which are contained in and are a part of the said record in Cause No. 2758 of the United States Circuit Court of Appeals, to wit;

1. Complaint (pages 1 to 27, both inclusive, of the record in said Cause No. 2758 of the United States Circuit Court of Appeals for the Ninth Circuit).
2. Defendant's motion to strike portion of complaint (pages 28, 29, 30 of said record).
3. Order of Court denying motion to strike portions of complaint (pages 30 and 31 of said record).
4. Demurrer of defendant (pages 31 and 32 of said record).
5. Minute order of Court overruling demurrer of defendant (pages 32 and 33 of said record).
6. Answer (pages 33 to 54, inclusive, of said record).
7. Motion to strike portions of answer (pages 54 to 57 of said record).
8. Order of Court on plaintiffs' motion to strike (pages 58 to 60 of said record).
9. Reply (pages 60 and 61 of said record).
10. Findings of fact and conclusions of law (pages 73 to 82 of said record).
11. Decree dated October 16, 1915 (pages 82 to 87 of said record).
12. Petition for appeal (pages 349 and 350 of said record).
13. Order allowing appeal (page 355 of said record).
14. Assignments of errors (pages 350 to 354 of said record). [28]

Mandate U. S. Circuit Court of Appeals in Ellis v. Treat et al., No. 2758.

UNITED STATES OF AMERICA,—ss.

The President of the United States of America, to the Honorable the Judges of the District Court of the United States for the Territory of Alaska, Third Division. GREETING:

Whereas lately in the District Court of the United States for the Territory of Alaska, Third Division, before you, or some of you, in a cause between George C. Treat, Edmund Smith and Logan Archibald, plaintiffs, and H. E. Ellis, defendant, No. 721, a decree in favor of said plaintiffs, and against said defendant, was duly filed on the 16th day of October, A. D. 1915, which said Decree is of record and fully set out in the said cause in the office of the clerk of the said District Court, to which record reference is hereby made and the same is hereby expressly made a part hereof, as by the inspection of the transcript of the record of the said District Court, which was brought into the United States Circuit Court of Appeals for the Ninth Circuit by virtue of an appeal agreeably to the Act of Congress in such cases made and provided, fully and at large appears.

And Whereas on the 31st day of May, in the year of our Lord one thousand nine hundred and sixteen, the said cause came on to be heard before the said Circuit Court of Appeals, on the said Transcript of the record and was duly submitted;

ON CONSIDERATION WHEREOF, It is now here ordered, adjudged and decreed by this Court, that the decree of the said District Court in this case be, and hereby is, reversed, with costs in favor of the appellant and against the appellees, and that this cause be, and hereby is remanded to the said District Court with instructions to dismiss the same. [29]

It is further ordered, adjudged and decreed by this Court, that the appellant recover against the appellees for his costs herein expended, and have execution therefor.

(September 5, 1916.)

YOU, THEREFORE, ARE HEREBY COMMANDED that such execution and further proceedings be had in the said cause in accordance with the opinion and decree of this Court and according to the right and justice and the laws of the United States ought to be had, the said decree of the said District Court notwithstanding.

WITNESS, the Honorable EDWARD DOUGLASS WHITE, Chief Justice of the United States, the 2d day of November, in the year of our Lord one thousand nine hundred and sixteen.

F. D. MONCKTON,

Clerk of the United States Circuit Court of Appeals for the Ninth Circuit.

Amount of costs allowed and taxed in favor of the appellant and against the appellees as per annexed bill of items, taxed in detail, $479.25.

F. D. MONCKTON,

Clerk.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division. Dec. 20, 1916. Arthur Lang, Clerk. [30]

BILL OF ITEMS ANNEXED TO MANDATE PURSUANT TO SECTION 5, RULE 31.

Debit

Item No.	Debit Items.	Dr.	Cr.
1.	Docketing the case and filing the record	$ 5.00	
2.	Entering 6 appearances.....	1.50	
3.	Entering continuance..... ...		
4.	Entering 3 orders.....	.60	
5.	Filing 7 papers.....	1.75	
6.	Filing briefs for each party appearing.....	10.00	
7.	Filing 20 printed record.....	5.00	
8.	Filing.....		
9.	Filing argument..... ...		
10.			
11.	Transferring cause on printed calendar (2)	2.00	
12.	Drawing, filing and recording decree or judgment.....	1.65	
13.			
14.	Filing petition for a rehearing.	5.00	
15.			
16.	Issuing.....		
17.			
18.			
19.	Issuing mandate, $5.00; costs and copy, .40.....	5.40	
20.	Total miscellaneous costs..	$37.90	

21.
22. Expense, printing record.....385.50

23.
24. Total of debit items..423.40

Credit

Item No.	Credit Items.	
1.	Deposited account misc. costs Chas. G. Ganty....	$ 25.00
2.	Deposited account misc. costs Smith, N. & W.....	11.40
3.	Deposited account adl. costs T. C. West.....	1.50
4.		
5.	Expense, printing record C. G. Ganty.....	385.50
6.		
7.	Total of credit items..	423.40
8.	Balance.....	
	Totals.....$423.40	$423.40

Itemized Bill of Costs Allowed and Taxed.

Item No.		Amount.
1.	Certified cost of transcript from court below.....	$ 47.25
2.		
3.	Deposit....Account misc. costs	26.50
4.	Total expense, printing record..	385.50
5.		
6.		

7. Attorney's docket fee..... 20.00
8. Balance costs.....

Total (inserted in body of mandate) taxed at..... $479.25

Attest: F. D. MONCKTON,
Clerk of the United States Circuit Court of Appeals for the Ninth Circuit. [31]

In the District Court for the Territory of Alaska, Third Division.

No. 721.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Judgment Pursuant to Mandate.

This cause having been tried on the 5th, 6th and 7th days of October, 1915, before the above Court, sitting as a court of equity, and the Court having made findings of fact and conclusions of law therein, which are of record, and the Court having, on the 16th day of October, 1915, made its decree on the merits, in favor of plaintiffs and against defendant, as follows (omitting statement of jurisdictional facts):

"Now, Therefore, in accordance with said decision and said Findings of Fact and Conclusions of Law, it is ORDERED, ADJUDGED and DECREED, as follows:

First. That plaintiff George C. Treat is the owner of and entitled to the immediate possession of an undivided one-tenth (1/10) interest; that plaintiff Edmund Smith is the owner of and entitled to the immediate possession of an undivided one-twentieth (1/20) interest; that plaintiff Logan Archibald is the owner of and entitled to the immediate possession of an undivided one-twentieth (1/20) interest; all in and to those eight (8) certain lode mining claims situated on the northerly side of Valdez Bay between Gold Creek and Shoups Bay in the Valdez Recording Precinct, Territory of Alaska, named and described as follows:

The Mystic No. 1 lode claim, notice of location of which is of record in Book K of Mining Locations, at page 506 of the records of said Valdez recording precinct, at Valdez, Alaska.

The Mystic No. 2 lode claim, notice of location thereof being of record in said Book K, at page 505, of said records.

The Mystery No. 1 lode claim, notice of location thereof being of record in Book O of Mining locations, at page 452 of said records.

The Mystery No. 2 lode claim, notice of location thereof being recorded in said Book O, at page 453, of said records.

The Mystery No. 3 lode claim, notice of loca-

tion thereof being recorded in said Book O, at page 605, of said records.

The Parallel No. 1 lode claim, notice of location thereof being of record in said Book O, at page 607, of said records.

The Parallel No. 2 lode claim, notice of location thereof being of record in said Book O, at page 606, of said records.

The High Bar lode claim, notice of location of which is of [32] record in said Book O, at page 451, of said records, together with all machinery, equipment, tools, buildings and improvements of every kind and nature now upon said mining claims or either of them.

Second. That defendant H. E. Ellis be, and he is hereby, required within 10 days from the entry of this decree to convey to plaintiff George C. Treat an undivided one-tenth (1/10) interest in and to all of said property; to Edmund Smith an undivided one-twentieth (1/20) interest in and to all of said property and to Logan Archibald an undivided one-twentieth interest in and to all of said property; and in case that said defendant H. E. Ellis fails or neglects to make, execute and deliver such a conveyance then that this decree shall stand in lieu thereof and shall be of the same force and effect for the purpose of vesting in each of the said parties, to wit, Geo. C. Treat, an undivided one-tenth (1/10) interest; Edmund Smith an undivided one-twentieth (1/20) interest; and Logan Archibald an undivided one-twentieth

(1/20) interest; all in and to each and all of said mining claims, together with all the machinery, tools, equipment and improvements thereon, and that this decree shall have the purpose of said conveyance, being treated as a deed properly executed and delivered by the said H. E. Ellis to the said Geo. C. Treat, Edmund Smith and Logan Archibald for their respective interest in the property hereinbefore described.

Third. That defendant H. E. Ellis, his agents, attorneys and employees are hereby and forever enjoined and restrained from in any manner contesting the rights of said Geo. C. Treat, Edmund Smith and Logan Archibald to their interests in said property as heretofore stated and that they, and each of them, be forever enjoined from denying the rights of the said Geo. C. Treat, the said Edmund Smith, and the said Logan Archibald, or their heirs or assigns the right of possession and enjoyment of said property.

Fourth. That the said H. E. Ellis, his agent, attorneys and employees are hereby commanded to let the said Geo. C. Treat into the immediate possession and enjoyment of an undivided one-tenth interest in and to all of said property, and to let the said Edmund Smith into the immediate possession and enjoyment of an undivided one-twentieth (1/20) interest in and to all of said property, and to let the said Logan Archibald into the immediate possession and enjoy-

ment of an undivided one-twentieth (1/20) interest in and to all of said property.

Fifth. That the plaintiffs do have judgment against said defendant in the sum of $89.55 for their costs and disbursements incurred in this action; that said costs and disbursements shall be taxed by the clerk of this court and when so taxed shall be entered in this decree and thereupon that execution issue against said defendant for said costs and disbursements.

Done in open court this 16th day of October, 1915.

(Signed) FRED M. BROWN,
Judge.

And the defendant having duly appealed from said decree and the whole thereof to the United States Circuit Court of Appeals for the Ninth Circuit, by which court said decree was, on the 5th [33] day of September, 1916, wholly reversed and said action ordered to be dismissed; and said Appellate Court did, on the 2d day of November, 1916, cause to be issued and did issue its mandate in due and proper form, by which mandate it was ordered, adjudged and decreed by said court that the decree of the District Court be, and hereby is, reversed, with costs in favor of appellant (defendant) against plaintiffs (appellees) and that said cause be, and hereby is, remanded to said District Court with instructions to dismiss the same, and further ordered by said Appellate Court that defendant recover his costs in said cause expended and have execution therefor; and the original of said mandate having

on December 20, 1916, been duly filed in the office of the clerk of the Court for the Third Division of the Territory of Alaska, as appears by the records in said cause:

Now, on motion of L. V. Ray, Esq., attorney for the defendant H. E. Ellis,

It is ORDERED AND ADJUDGED that pursuant to the directions in said mandate contained, that said cause be and the same is hereby dismissed, and further that defendant do have and recover from the plaintiffs, George C. Treat, Edmund Smith and Logan Archibald the sum of $479.25, costs taxed against them in the Appellate Court, and the further sum of $61.80, costs taxed by the Clerk in this court, or a total judgment for costs against the plaintiffs and each of them in the sum of $541.05, and that execution issue therefor.

Done in open court this 10th day of March, A. D. 1917.

FRED M. BROWN,
District Judge.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division. Mar. 10, 1917. Arthur Lang, Clerk. By J. P. Geraghty, Deputy.

Entered Court Journal No. 11, page No. 176.

[34]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Reply.

Come now the plaintiffs in the above-entitled action, and for reply to defendant's answer herein, admit, deny and allege as follows:

I.

Referring to that portion of Paragraph IV, pages 2 and 3 of defendant's answer, commencing with the word "that" on the last line of page 2 thereof, and ending with the word "aforesaid" on line 14 of page 3 as follows:

> "That during the negotiations preceding the signing of said agreement to lease, such plaintiffs proposed in writing to defendant that if said defendant would execute such proposed Crane contract, so designating the same, such plaintiffs, namely, Treat and Smith, would agree to accept and would accept in full payment of all claims and demands by them held against the defendant for and on any account, fifteen percentum (15%) net out of the royalty

to be derived from said proposed Crane lease and to be paid by the said lessee to first parties; that such offer was agreed to by and accepted by defendant and the said Crane contract executed by defendant and the said plaintiffs Treat and Smith, thereupon released the defendant from any and all debts and obligations whatsoever then due and owing from defendant to such plaintiffs, for the consideration aforesaid";

plaintiffs deny each and every allegation therein contained, and allege that plaintiffs did agree with the defendant that they would accept 15% net out of the royalty to be derived from said lease to A. J. Crane, but that said amount so to be received by the plaintiffs was not to be in full payment, or any payment, of all or any claims or demands by plaintiffs Smith [35] and Treat against defendant, but was to be payment of plaintiff's portion of the royalty accruing to the lessors of said lease; that plaintiffs agreed to accept said 15% of said royalty as their portion as an inducement to the defendant to join with plaintiffs in making said lease to said Crane.

II.

Referring to that portion of paragraph VI, page 4, of defendant's answer, commencing with the word "but" on line 7 thereof, and ending with the word "therefor," the last word in said paragraph, as follows:

"but alleges the fact to be that such plaintiffs, by virtue of the agreement hereinbefore stated in Paragraph IV of this answer, were entitled to receive fifteen percentum, net, of the royalty

derived from the said lease, and that such plaintiffs did so receive such net percentage in conformity with the agreement therefor."

plaintiffs deny the same and the whole thereof.

III.

Referring to that portion of paragraph VIII on page 5 of defendant's answer, beginning with the word "Edmund Smith," on line 6 of page 5, and ending with the word "defendant," the last word in said paragraph, as follows:

"Edmund Smith, an attorney at law, and then acting as such for the defendant, and counselling and advising said defendant in all matters pertaining to said mining claims; that at the time of and before signing the said Millard contract or lease the defendant objected to the language in said instrument contained purporting to state ownership of any portion of said property in Treat and Smith, but the defendant was informed and told by the plaintiff Smith, then so acting as advisor and counsellor for the defendant as aforesaid, that such phrasing and wording was not intended to convey an idea of co-ownership in the plaintiffs Smith and Treat, but was only necessary for the reason that the said Smith would *thereby better* enabled to represent the interests of defendant in the capacity of defendant's attorney, during the then proposed absence of defendant."

the plaintiffs deny the same and the whole thereof.

IV.

Referring to that portion of Paragraph XIV on

page 7 of defendant's answer, commencing with the word "but" on line 4 thereof, and ending with the word "limitation," the last word in said [36] *in said* paragraph, as follows:

> "but alleges that plaintiffs' cause of action at law, if any such cause of action existed, accrued more than six years prior to the date of commencement of the action at bar, and plaintiffs are estopped by virtue of the provisions of Section 838 of the Compiled Laws of the Territory of Alaska to institute such action after the expiration of the statutory period of limitation."

plaintiffs deny the same and the whole thereof.

V.

Referring to Paragraph I of the first affirmative defense of said answer, plaintiffs deny the same and the whole thereof, and plaintiffs allege that plaintiffs Treat and Smith were jointly in possession of all of the mining claims described in plaintiff's complaint, between about the 5th day of June, 1909, and about the 1st day of March, 1915, and that said plaintiffs went into possession on or about the 5th day of June, 1909, under and by virtue of the contract described in plaintiff's complaint herein.

VI.

Referring to paragraph I of the second affirmative defense contained in said answer, plaintiffs deny each and every allegation therein contained.

VII.

Referring to paragraph I of the third affirmative defense of said answer, plaintiffs deny that the complaint herein fails to allege any matter of equity

entitling the plaintiffs to the relief prayed for therein. Plaintiffs admit that on the 4th day of May, 1915, in the District Court of the Territory of Alaska, Third Division, plaintiffs Treat, Smith and Archibald, being the same identical persons as the plaintiffs in the case at bar, filed in said court a complaint against the defendant herein, said cause being numbered 721 on the docket of said court, and plaintiffs admit that such proceedings were had that said cause thereafter proceeded to judgment in said court, and thereafter an appeal was prosecuted from said judgment to the Circuit Court of Appeals for the 9th Circuit, which judgment **[37]** was by said Circuit Court of Appeals reversed, but plaintiffs deny that said cause No. 721 involved or concerned the matters and things involved in this action, and deny that the matters and issues presented in this action were pleaded or determined or could have been pleaded or determined in said cause No. 721, and allege that said cause No. 721 was an action for the specific performance of a contract for the sale and delivery of personal property, while this is an action for the specific performance of a contract to convey an interest in real estate as alleged in the complaint herein.

VIII.

Answering paragraph II of the third affirmative defense set forth in the defendant's answer, the plaintiffs deny each and every allegation, statement and averment therein contained.

WHEREFORE, plaintiffs pray the Court for judgment as prayed for in their complaint herein.

LYONS & ORTON,
SMITH, NEWCOMB & WORTHINGTON,
DONOHOE & DIMOND,
Attorneys for Plaintiffs.

United States of America,
Territory of Alaska,—ss.

Anthony J. Dimond, being first duly sworn, deposes and says: I am one of the attorneys for the above-named plaintiffs in the above-entitled cause, and make this verification for and on behalf of said plaintiffs for the reason that none of said plaintiffs are within the territory of Alaska; that I have read the foregoing reply and know the contents thereof, and all and singular the statements, allegations and averments therein contained are true, I verily believe.

ANTHONY J. DIMOND.

Subscribed and sworn to before me this 2d day of July, 1917.

[Official Seal] FRANK J. HAYES,
Notary Public for Alaska.

My commission expires May 13, 1921. [38]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Motion to Invoke Decision of Court upon Certain Phases of Matter Plead by Defendant in His Answer.

Comes now the defendant above named by his attorney, L. V. Ray, who respectfully represents and shows to the Court as appears from the record and files in said cause, including all the pleadings herein, that defendant as a part of his answer raises the question as to the rights of the plaintiffs to maintain their action alleging former adjudication on same subject matters between the same parties, and that such decision might eliminate from the case the clearly defined and easily stated mass of testimony, the presence or absence of which will not change or effect the method of presenting other aspects of the litigation.

Dated August 2, 1917.

L. V. RAY,
Attorney for Defendant.

Service by receipt of copy acknowledged this 4th day of August, 1917.

DONOHOE & DIMOND,
Of Counsel for Plaintiffs.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division, Aug. 4, 1917. Arthur Lang, Clerk. By C. H. Wilcox, Deputy. [39]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Opinion.

Defendant pleads *res judicata* in bar of plaintiffs' action. A former suit between the same parties over the same subject matter was tried by this court and determined in favor of the plaintiffs and decree entered that defendant be required to convey to plaintiffs an undivided one-fifth interest in mining claims owned by him. An appeal was taken by defendant, the decree reversed and the cause remanded, with instructions to dismiss the case, which was done. 236 Federal, 120.

In said case plaintiffs alleged in their complaint that in the year 1907 they advanced certain money to defendant to enable him to develop and test the ore from certain mining claims of which he was the owner. Said money not being repaid, plaintiffs entered into a written agreement with defendant in 1908, whereby it was agreed that plaintiffs would form a corporation; that defendant would deed said mining claims to the corporation and give plaintiffs 20% of the capital stock. This agreement was never carried out.

In 1909 all parties agreed to a lease of said mining claims, plaintiffs joining with defendant in signing said lease. Said mining claims were worked by the lessee for several years at considerable profit, plaintiffs receiving their share. The plaintiffs alleged that at the time of making said lease, the **[40]** defendant agreed orally to give them an undivided one-fifth interest in said mining claims, in lieu of stock, provided their agreement of 1908 to incorporate was not carried out. Plaintiffs prayed in their complaint (among other things) that defendant specifically perform the contract of July 9, 1908, set out in the fifth paragraph of the complaint, or that he deed to plaintiffs Treat and Smith each an undivided one-tenth interest in and to each and all of said eight mining claims.

The question was not raised by the defendant on the trial of said case that the said agreement of July 9, 1908, to incorporate could not be specifically enforced as being too indefinite and uncertain, but, on the contrary, counsel on both sides, as well as the

Court, proceeded upon the theory that the action was one for the specific performance of the later agreement to convey an undivided one-fifth interest in the property to plaintiffs.

Plaintiff Smith testified that at the time of making the lease Ellis agreed to give them the 20% interest in the property (see transcript of record, page 112). In this he is corroborated by plaintiff Treat (transcript of record, page 170).

While this agreement, modifying the written contract of 1908, was a parol one, the cause was tried on the theory that it was taken out of the statute of frauds by the lease, in writing, signed by both defendant Ellis and plaintiffs Treat and Smith, and also by other writings signed by defendant, admitting the said interest of plaintiffs in said mining claims, as well as consideration paid and change of possession. Had the question been raised, or the attention of the Court called to the form of the action, to wit, that it might be held to be an action to specifically enforce the agreement to incorporate, it would have been apparent at once that such contract could not be specifically enforced. [41]

The Appellate Court reversed the case upon this ground,—that it was an action to enforce the agreement to incorporate and that such contract was too uncertain and indefinite and could not be so enforced, and "that the complaint calls for the performance of acts that require the participation of others, not parties to the contract, or to the suit."

Plaintiffs bring this new action to secure the same undivided one-fifth interest in the same mining

claims, alleging that on June 5, 1909, it was agreed orally between the plaintiffs, Treat and Smith, and the defendant that the defendant would convey to them the undivided one-fifth interest in said mining claims. Reference is made in this complaint to the agreement, concerning the loan of money in 1907 and to the agreement to incorporate, dated July 9, 1908. The defendant answered, setting up, among other defenses, that of *res adjudicata,* and pursuant to Equity Rule 29, said defense is taken up and now disposed of.

The mere recital of the facts seems to show that the issues in this case have been finally and conclusively determined in the former one. The plaintiffs seek to recover of and from defendant the same one-fifth interest in the same property sued for in the first action, based upon the same contractual relations. The same evidence would be introduced and the same difficulty encountered by plaintiffs in an action for specific performance. It is true that in their complaint in the present action they allege upon a contract entered into in June, 1909, but it is upon precisely this contract that judgment was rendered in this court on the first trial, in the belief that the evidence sustained such finding and judgment.

The Circuit Court of Appeals, however, say (236 Fed., p. 123):

> "It is not shown that Treat and Smith relied on any admission of their title by the appellant, or that they changed their position as to the property in any [42] way, and there is no

proof that the original contract was ever changed."

Plaintiffs have filed a voluminous brief citing many cases, where another action may be maintained, notwithstanding the former adjudication between the same parties, over the same subject matter.

The case of Cromwell v. Sac County, 94 U. S., p. 351, is a leading case on this question. In that case the Court says, at page 352:

> "In considering the operation of this judgment, it should be borne in mind, as stated by counsel, that there is a difference between the effect of a judgment as a bar or estoppel against the prosecution of a second action upon the same claim or demand, and its effect as an estoppel in another action between the same parties upon a different claim or cause of action. In the former case, the judgment, if rendered upon the merits, constitutes an absolute bar to a subsequent action. It is a finality as to the claim or demand in controversy, concluding parties and those in privity with them, not only as to every matter which was offered and received to sustain or defeat the claim or demand, but as to any other admissible matter which might have been offered for that purpose."

This seems to be the settled rule governing the defense of *res judicata* and it is unnecessary to go into or discuss the long list of cases cited by plaintiffs, as the former judgment seems to be a finality as to the claim or demand in controversy.

See Dowell v. Applegate, 152 U. S., at page 345, where the Court says:

> "This case, consequently, comes with the rule that 'a judgment estops not only as to every ground of recovery or defense actually presented in the action, but also as to every ground which might have been presented.' "

See also Union Cent. Life Ins. Co. v. Drake, 214 Fed. 537.

Dana v. Morgan et al., 219 Fed. 313.

The defense of *res judicata* will therefore have to be sustained.

Dated Valdez, Alaska, August 16, 1917.

FRED M. BROWN,
District Judge.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division. Aug. 10, 1917. Arthur Lang, Clerk. By John B. Miller, Deputy.

Entered Court Journal No. 11, page No. 369. **[43]**

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Order Sustaining Plea of Res Adjudicata Set Up in Defendant's Answer and Dismissing Action.

This matter came on to be heard upon the motion of defendant for decision of points of law, under Equity Rule 29, in respect to the defense of *res adjudicata* raised by a portion of the answer of defendant, the matter being submitted upon briefs heretofore filed in said cause, pursuant to stipulation so agreeing, by Messrs. Donohoe & Dimond, of counsel for plaintiffs, and L. V. Ray. Esq., counsel for defendant;

And the Court having duly considered the briefs of respective counsel, and having duly considered the transcript of record in cause No. 2758 of the United States Circuit Court of Appeals for the Ninth Circuit, entitled "H. E. Ellis, Appellant, vs. George C. Treat, Edmund Smith and Logan Archibald, Appellees," the same being cause No. 721, in the District Court for the Territory of Alaska, Third Division, entitled "George C. Treat, Edmund Smith and Logan Archibald, Plaintiffs, vs. H. E. Ellis, Defendant," and in connection therewith, the opinion of the appellate court made upon such record and reported in Vol. 236, Federal Reporter, at page 120, and being fully advised in the premises, did on August 16th, 1917, make and [44] file its opinion in writing upon the points raised by said motion.

Now, therefore, in accordance with the announced opinion of this Court,

IT IS ORDERED AND DECREED that the portion of defendant's answer setting up as a defense

to plaintiff's complaint a plea or former adjudication of the same subject matter between the same parties be, and the same is, decreed to be a complete and absolute bar and defense to the matters and things set up and alleged in plaintiff's complaint; and further,

That the complaint of plaintiff does not state facts sufficient to constitute a cause of action; and, therefore,

IT IS HEREBY ORDERED AND DECREED that said cause be and the same is hereby dismissed, and that defendant recover from plaintiffs his costs herein expended.

It is further ordered that should the plaintiffs in this cause desire to take an appeal from this order, in that event the printed transcript of the record in cause No. 2758 of the United States Circuit Court of Appeals for the Ninth Circuit, entitled "H. E. Ellis, Appellant, vs. George C. Treat, Edmund Smith and Logan Archibald, Appellees," shall be included in and made a part of the record in this case.

Done in open court this 28th day of August, A. D. 1917.

FRED M. BROWN,
District Judge.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division, Aug. 28, 1917. Arthur Lang, Clerk. By C. H. Wilcox, Deputy.

Entered Court Journal No. S–2, page No. 219.

[45]

Opinion, U. S. Circuit Court of Appeals in Ellis vs. Treat et al., No. 2758.

ELLIS v. TREAT et al.

(Circuit Court of Appeals, Ninth Circuit, September 5, 1916.)

No. 2758.

Appeal from the District Court of the United States for the Third Division of the Territory of Alaska—FRED M. BROWN, Judge.

Bill by George C. Treat and others against H. E. Ellis. From a decree for complainants, defendant appeals. Reversed and remanded, with directions to dismiss.

On May 15, 1907, the appellant, the owner of the Mystic lode mining claim, entered into an agreement with the appellees Treat and Smith, whereby the latter advanced $500 to pay for shipping five tons of ore from said mining claim to a smelter. Treat and Smith were to receive back their $500, and also one-fourth of the net returns from the smelter, and in case those returns were insufficient to repay said $500 to Treat and Smith, they were to have a lien on the mining claim to secure the same. They received nothing from the smelter returns. On July 9, 1908, the parties entered into an agreement whereby the appellant was to deed eight mining claims, including the Mystic mining claim to a corporation to be called the Mystic Gold Mining Company. The whole of the capital stock of the corporation was to be issued to the appellant, and he

was to transfer to Treat and Smith 20 per cent thereof, and to turn over to the treasurer of the corporation an additional 20 per cent, to be sold to pay for development work, etc. Treat and Smith agreed to pay all the expenses of incorporating the company, recording and filing necessary papers, and to receipt in full for all claims they had against the appellant, and "to give whatever time and attention that might be necessary to the proper organization of said corporation and the sale of said stock." Articles of incorporation were prepared by Smith, but were not executed. The parties were unable to sell any of the stock, and no stock was ever issued. On June 5, 1909, one Crane secured **[46]** an option on the mining claims, with the right to lease the same for a period of six years. In the option it was provided that 85 per cent of the royalty under the lease was to be paid to the appellant, and the remainder to Treat and Smith. The option was not carried out, and on July 23, 1909, Miller, trustee, was substituted for Crane, and a lease was made which recited that the appellant was a four-fifths owner, and Treat and Smith each owned 10 per cent of the mining claims. The lessee paid to the appellant under the lease something over $50,000, and to Treat and Smith about $7,000, but surrendered possession of the premises in July, 1914. In May, 1915, the appellees began their suit against the appellant for specific performance of the contract of July 9, 1908, alleging that, owing to the stringency of the money market and the difficulty that would be experienced in selling treasury stock of the proposed corporation to advan-

tage, it was decided by all the parties to the contract of July 9, 1908, to await a more opportune time to form the corporation, and that, while awaiting that time, the leases were made to the mining claims, *which* the understanding that at the termination thereof the corporation would be formed, and the contract of July 9, 1908, would be carried out. The prayer of the complaint was that the appellant specifically perform the contract of July 9, 1908, or that he convey to the appellees Treat and Smith each an undivided one-tenth interest in all of the eight mining claims, and that the said appellees be adjudged and decreed to be the owners of an undivided one-fifth interest in all machinery, tools, equipment, buildings, and improvements placed on said mining claims.

The answer of the appellant alleged that about two months after the execution of the contract of July, 9, 1908, Treat and Smith informed the appellant that they could not carry out their part of the contract and asked him to pay them the money which he owed them, and that it was then specifically agreed between the parties that the contract [47] of July 9, 1908, should be abandoned, and that Treat and Smith should hold the mining claims of appellant as security for the money formerly owing to them, from the payment of which the appellant was to have been released under the terms of the contract of July 9, 1908. The decree adjudged Treat to be the owner of, and entitled to, the immediate possession of an undivided one-tenth interest, and that Smith and Archibald, to whom Smith had trans-

ferred a one-half interest, were each the owner of, and entitled to the immediate possession of, an undivided one-twentieth interest of the eight mining claims, and required the appellant to convey said interests to the respective appellees.

T. C. WEST, of San Francisco, Cal., and CHARLES GANTY, of Valdez, Alaska, for Appellant.

DONOHOE & DIMOND and LYONS & RITCHIE, all of Valdez, Alaska, and SMITH, NEWCOMB & WORTHINGTON, of Seattle, Wash., for Appellees.

Before GILBERT, ROSS, and HUNT, Circuit Judges.

GILBERT, Circuit Judge (after stating the facts as above).

(1, 2.) The assignments of error bring in question the sufficiency of the complaint to state a cause of suit, and the propriety of the decree which was rendered thereon. The decree is clearly erroneous, for the reason that it is unsupported by the allegations of the complaint. It does not appear from the complaint that the appellant ever promised or agreed to convey to the appellees Treat and Smith any interest in the mining claims. What the appellant agreed to do was to convey to a corporation thereafter to be formed eight mining claims, in consideration of all the stock of the corporation, and thereafter to transfer to the appellees 20 per cent of the stock. The decree treats the contract as a contract to convey an interest in real estate, which it is not. It is an agreement to transfer personal property.

No principle of the law of specific performance is more thoroughly established than that the decree must conform to the precise contract made between the parties. A court will not make a **[48]** contract for them. 36 Cyc. 789; Gachet v. Morton, 181 Ala. 179, 61 South. 817; Philadelphia & Reading Railroad v. Lehigh Navigation Co., 36 Pa. 204. The fact that the lease of the mining property contained the recital that the appellant and Treat and Smith were the owners of the property cannot be held to estop the appellant now to dispute the appellees' claim of title. The essential elements of estoppel are lacking. It is now shown that Treat and Smith relied on any admission of their title by the appellant, or that they changed their position as to the property in any way, and there is no proof that the original contract was ever changed.

It remains to be considered whether, under the allegations of the bill, and the prayer for such other and further relief as may be just and equitable, the appellees are entitled to a decree for the specific performance of the contract which they pleaded. There are several reasons why such relief must be denied them:

(3) 1. The contract as pleaded is too indefinite and uncertain to justify a decree of specific performance. It contains no mention of the amount of the capital stock of the proposed corporation, the number or value of its shares, the number of its directors, the place of its business, its powers, or its duration. It is the accepted rule that the minds of the parties must have met upon all the terms of the contract the

specific performance of which is sought to be enforced. Pressed Steel Car Co. v. Hansen, 137 Fed. 403, 71 C. C. A. 207, 2 L. R. A. (N. S.) 1172; Jones v. Patrick (C. C.), 145 Fed. 440; Williams v. Stewart, 25 Minn. 516; McKnight v. Broadway Investment Co., 147 Ky. 535, 145 S. W. 377; Schenck v. Ballou, 253 Ill. 415, 97 N. E. 704, Ann. Cas. 1913A, 251; Talmadge v. Arrowhead R. Co., 101 Cal. 367, 35 Pac. 1000; Tharp University v. Komus Realty Co., 159 Ky. 386, 167 S. W. 136; Ward v. Newgold, 115 Md. 689, 81 Atl. 793, Ann. Cas. 1913A, 919; Strack v. Roeszel (Okl.), 148 Pac. 1017.

(4, 5) 2. The appellees have never performed the covenants which were to be kept and performed by them. They allege in their **[49]** complaint that performance was rendered impossible by the stringency of the money market, and the difficulty which would probably have been experienced in selling the treasury stock. There is nothing to show that conditions are any better at the present time, or that the appellees now are, or ever will be, able to sell the treasury stock. While the appellant was to part with 20 per cent of his stock, which in a sense may be said to represent one-fifth of his mining property, he was to receive, as part of the consideration therefor, the benefit of the proceeds of another 20 per cent of the stock to be sold by the services of the appellees and applied to the development of the mines. Specific performance is not a matter of right, but rests in the sound judicial discretion of the court, and before it may be awarded, it must appear that the complainant on his part has complied with

the substantial conditions of the contract, under the rule that he who seeks equity must himself do equity. Washington Irr. Co. v. Krutz, 119 Fed. 279, 56 C. C. A. 1; Cronen v. Moore, 210 Fed. 239, 127 C. C. A. 57.

(6) 3. Even if the contract were specific and certain, we are of the opinion that within well-settled principles which govern specific performance, equity should withhold the specific relief here sought, on the ground that the complaint calls for the performance of acts which require the participation of others not parties to the contract or to the suit, such as the execution of articles of incorporation, the election of a board of directors, the adoption of resolutions, and other details of corporate action. A court of equity will not, for instance, compel a corporation to *but* in its stock in order to carry out an agreement whereby it has promised to pay for a lease of lands in stock. Smith v. Flathead River Coal Co., 64 Wash. 642, 117 Pac. 475. Nor will it require the specific performance of an agreement to enter into a copartnership. Pomeroy Specific Performance of Contracts, #290; Hyer v. Richmond Traction Co., 168 U. S. 471, 18 Sup. Ct. 114, 42 L. Ed. 547. Nor will it compel a defendant **[50]** to buy real estate in order to carry out his contract to convey the same. Laubengayer v. Rhode, 167 Mich. 605, 133 N. W. 535.

(7) 4. While this is a suit to compel the creation and organization of a corporation, and the transfer of a portion of its stock after issuance, it is, so far as the appellee's interest therein is concerned, a suit to compel the transfer of stock. It is the rule that

a decree for the specific performance of a contract to convey shares of stock in a corporation will be denied unless the facts pleaded and shown present an unusual and exceptional situation in which damages will be inadequate. Bernier v. Griscom-Spencer Co. (C. C.), 169 Fed. 889. In Bacon v. Grosse, 165 Cal. 481, 132 Pac. 1027, Judge Sloss, for the Supreme Court of California said:

> "Undoubtedly it is the general rule that equity will not compel the delivery of specific personal property wrongfully withheld, nor enforce the specific performance of a contract *on* sell chattels, unless it is shown that money damages for the breach of the obligation would not afford adequate relief. Senter v. Davis, 38 Cal. 450; Harle v. Haggins, 131 App. Div. 742, 116 N. Y. Supp. 51; Civ. Code, #3387. This rule has often been applied to actions involving corporate stock, the rule declared being that the plaintiff will be denied specific relief in the absence of proof that he would derive some peculiar advantage from the possession of the particular stock which he seeks to retain."

The decree is reversed, and the cause is remanded, with instructions to dismiss the same. **[51]**

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEO. C. TREAT et al.,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Minute Order Granting Plaintiff Thirty Days in Which to Prepare and File Bill of Exceptions.

Now, on this day, on motion of Donohoe & Dimond, attorneys for plaintiff, IT IS ORDERED that the plaintiffs herein have thirty days time from this date in which to prepare and file their bill of exceptions herein.

August 1917 term. Seward, Alaska, August 28th, 1917. 8th court day. Tuesday.

Entered Court Journal No. S–2, page No. 220. **[53]**

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Order Settling and Certifying Bill of Exceptions.

This cause having come on for hearing on the motion of the plaintiffs for an order settling and certifying their bill of exceptions to be used upon their appeal about to be prosecuted in said cause to the United States Circuit Court of Appeals for the Ninth Circuit from the order, judgment and decree of this Court made and entered herein on the 28th day of August, 1917, dismissing said cause on the ground of a former adjudication of the same subject matter between the same parties; and it appearing that said plaintiffs filed herein on the 15th day of September, 1917, their proposed bill of exceptions and on said day served the same upon L. V. Ray, Esq., the attorney for the defendant, and also gave said defendant, through his said attorney notice of the time and place of the settlement of said bill of exceptions; and the said defendant having offered no amendments or objections to said bill of exceptions; and the undersigned Judge of said District Court having inspected and considered the same and found such bill of exceptions to contain all of the papers, pleadings, proceedings and exceptions necessary to a determination of the questions involved, and raised by the plaintiffs' exceptions;

IT IS THEREFORE ORDERED, that the foregoing bill of exceptions containing an exception of the plaintiffs to said order, judgment and decree of the court herein, made and entered [54] herein on August 28, 1917, and having attached thereto, and by reference inserted therein, the following named

papers, pleadings, proceedings and exceptions, to wit:

1. Plaintiffs' complaint;
2. Defendant's motion to dismiss complaint;
3. Order denying defendant's motion to dismiss complaint.
4. Defendant's answer, complete except that it contains, not *verbatim,* but by reference to the printed record in Cause No. 2758 of the United States Circuit Court of Appeals for the Ninth Circuit, the copies of pleadings in Cause No. 721 of the said District Court mentioned in the third paragraph of the third affirmative defense of said answer, to wit:
 1. Complaint.
 2. Defendant's motion to strike portions of complaint.
 3. Order of Court denying motion to strike portions of complaint.
 4. Demurrer of defendant.
 5. Minute order of Court overruling demurrer of defendant.
 6. Answer.
 7. Motion to strike portions of answer.
 8. Order of Court on plaintiffs' motion to strike.
 9. Reply.
 10. Findings of fact and conclusions of law.
 11. Decree dated October 16, 1915.
 12. Petition for appeal.
 13. Order allowing appeal.
 14. Assignment of errors.

5. Plaintiffs' reply to said answer.
6. Motion of defendant to invoke questions of *res judicata* raised by said answer.
7. Opinion of District Court on question of *res judicata.*
8. Order, judgment and decree of said District Court, made, rendered and entered on the 28th day of August, 1917, and entered at large in Court Journal No. S–2, page 219, sustaining plea of *res judicata* and dismissing the above-entitled cause. **[55]**
9. Opinion of the United States Circuit Court of Appeals for the Ninth Circuit, rendered September 15, 1916, in Cause No. 2758 of said court, being the cause entitled "H. E. Ellis, Appellant, vs. Geo. C. Treat, Edmund Smith and Logan Archibald, Appellees," and printed and appearing in Volume 236 Federal Reporter, pages 120, 121, 122, 123 and 124.
10. The printed record of the said United States Circuit Court of Appeals for the Ninth Circuit in Cause No. 2758 of said court, being the cause entitled "H. E. Ellis, Appellant, vs. Geo. C. Treat, Edmund Smith and Logan Archibald, Appellees," consisting of 377 printed pages, the said record being the record of the appeal taken from the judgment and decree rendered by the above-named District Court on October 16, 1915, in Cause No. 721 of said District Court being that cause entitled, "Geo. C. Treat, Edmund Smith and

Logan Archibald, Plaintiffs, vs. H. E. Ellis, Defendant."

11. Order extending time to settle and file bill of exceptions until September 27, 1917.
12. Acknowledgment of service of bill of exceptions by defendant.
13. Notice of time and place of hearing for settlement of bill of exceptions, with proof of service upon defendants;

be, and the same hereby is, allowed, approved and settled; and that the same shall be and constitute the said plaintiffs' bill of exceptions upon their said appeal in said cause.

AND IT IS FURTHER ORDERED: That this order shall be deemed and taken as a certificate of the undersigned Judge of this court that such bill of exceptions consists of all of the papers, pleadings, proceedings and exceptions filed, presented, had, done and taken in said cause, and all of the matters and evidence considered by this Court in making and entering said order, judgment and decree of August 28, 1917, dismissing said cause, and of all matters and things necessary or proper for the determination of the questions involved herein, or raised or attempted to be raised by said appeal.

Done at Valdez, Alaska, this 27th day of September, 1917.

FRED M. BROWN,
Judge of the District Court for the Territory of Alaska, Third Division.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division, Sep. 27, 1917.

Arthur Lang, Clerk. By C. H. Wilcox, Deputy.
Entered Court Journal No. 11, page No. 407.
[56]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Petition for Appeal.

To the Honorable FRED M. BROWN, Judge of the above-named Court:

George C. Treat, Edmund Smith and Logan Archibald, plaintiffs in the above-entitled cause, feeling aggrieved by the order and judgment of the Court made, rendered and entered in said cause on the 28th day of August, 1917, ordering and decreeing that the portion of defendant's answer setting up as a defense to plaintiff's complaint a plea of former adjudication of the same subject matter between the said parties to be a complete and absolute bar and defense to the matters and things set up and alleged in plaintiffs' complaint in this action, and dismissing said cause, do hereby appeal from said decree to the United States Circuit Court of Appeals for the Ninth Circuit for the reasons set forth in the

assignment of errors filed herewith, and the said plaintiffs, and each of them, pray that their appeal be allowed and that citation be issued as provided by law, and that a transcript of the records, pleadings and proceedings upon which said judgment and order was based, duly authenticated, be sent to the said United States Circuit Court of Appeals for the Ninth Circuit under the rules of said court [57] in such cases made and provided.

Dated September 28, 1917.

DONOHOE & DIMOND,
Of Attorneys for Plaintiffs.

Service of the foregoing petition for appeal by receipt of copy thereof acknowledged this 9th day of October, 1917, by—

L. V. RAY,
Attorney for Defendant.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division. Oct. 26, 1917. Arthur Lang, Clerk. By John B. Miller, Deputy. [58]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Assignment of Errors.

Comes now the plaintiffs in the above-entitled action and file herein the following assignment of errors upon which they will rely in their prosecution of their appeal in the above-entitled cause from the judgment and order dismissing said cause made and entered herein by the Court on the 28th day of August, 1917, to wit:

I.

The above-named District Court erred in making and entering its order and judgment herein on the 28th day of August, 1917, sustaining that portion of defendant's answer which set up as a defense to plaintiffs' complaint a plea of former adjudication of the same subject matter between the same parties; and decreeing such defense to be a complete and absolute bar and defense to the matters and things alleged in plaintiffs' complaint, and that said complaint does not state facts sufficient to constitute a cause of action; and dismissing said cause on those grounds; the said order and judgment of said District Court being against the law and contrary to the law and unsupported by the pleadings herein, or by any matters of evidence considered by the Court, and totally unsupported by the record of that certain cause in the United States Circuit Court of Appeals for the Ninth Circuit entitled H. E. Ellis, Appellant, vs. Geo. C. Treat, Edmund Smith and Logan Archibald, Appellees, being Cause No. 2758 of the said Circuit Court of Appeals, [59] which record, and the opinion of the Judges of the United States Cir-

cuit Court of Appeals thereon reported in Volume 236 Federal Reporter, at page 120, were considered by the said District Court in entering its said order and judgment.

DONOHOE & DIMOND,
LYONS & ORTON,
SMITH, FOSTER & WORTHINGTON,
Attorneys for the Plaintiffs.

Service of the foregoing assignment of errors by receipt of copy thereof acknowledged this 9th day of October, 1917.

L. V. RAY,
Attorney for Defendant.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division. Oct. 26, 1917. Arthur Lang, Clerk. By John B. Miller, Deputy. [60]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Petition for Order Fixing Amount of Appeal Bond.

Come now the plaintiffs above named, and being about to prosecute an appeal from the order, judg-

ment and decree of the above-named court made and entered herein on the 28th day of August, 1917, to the United States Circuit Court of Appeals for the Ninth Circuit, pray an order of the above-named court, or the Honorable Fred M. Brown, Judge thereof who made and entered said order, judgment and decree, fixing the amount of the bond to be furnished by plaintiffs upon such appeal to said defendant, conditioned upon said plaintiffs' prosecuting said appeal to effect and upon their answering to defendant of all damages and costs if they fail to make their plea good, and said bond to act as a supersedeas for the retention in the above-named court of the sum of twenty-five hundred seventy-five and 37/100 dollars ($2575.37), now held in the registry of said court to abide the determination of said action.

Dated this 28th day of September, 1917.

DONOHOE & DIMOND,
LYONS & ORTON,
SMITH, FOSTER & WORTHINGTON,
Attorneys for Plaintiffs.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division. Oct. 26, 1917. Arthur Lang, Clerk. By John B. Miller, Deputy.
[61]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Order Allowing Appeal and Fixing Amount of Bond.

On motion of the above-named plaintiffs by their attorneys of record,—

IT IS ORDERED: That an appeal to the United States Circuit Court of Appeals for the Ninth Circuit, from the order, judgment and decree heretofore and on the 28th day of August, 1917, made and entered herein, be, and the same hereby is, allowed to said plaintiffs; and that a certified transcript of all of the exceptions, records, pleadings, proceedings and papers herein, upon which said order, judgment and decree was rendered, be sent to the said United States Circuit Court of Appeals for the Ninth Circuit.

AND IT IS FURTHER ORDERED: That a bond in the sum of one thousand dollars ($1,000.00), conditioned according to law and with good and sufficient surety, be executed and filed herein by paid plaintiffs, said bond to be approved by the undersigned Judge of said District Court; and that

upon the execution, filing and approval of said bond, the said order, judgment and decree rendered and entered herein on August 28, 1917, as aforesaid, be forthwith superseded and all proceedings in said cause stayed and there shall be retained in the registry of this court in this cause the sum of twenty-five hundred seventy-five and 37/100 dollars ($2575.37) now held therein until a final determination of said cause upon such appeal.

Done at Valdez, Alaska, this 26th day of October, 1917.

FRED M. BROWN,
District Judge.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division. Oct. 26, 1917. Arthur Lang, Clerk. By John B. Miller, Deputy. Entered Court Journal No. 11, page No. 500. [62]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Supersedeas Bond on Appeal.

KNOW ALL MEN BY THESE PRESENTS, that we George C. Treat, Edmund Smith and Logan Archibald, as principals, and National Surety Company, a corporation organized under the laws of the State of New York, and doing business in the Territory of Alaska, as surety, are held and firmly bound unto the above-named defendant, H. E. Ellis, in the sum of one thousand dollars ($1,000.00) to be paid to the said H. E. Ellis, his heirs, executors, administrators or assigns, and for which payment well and truly to be made we bind ourselves, our heirs, executors, administrators and successors jointly and severally firmly by these presents.

Executed and sealed with our seals and dated this 22d day of October, 1917.

The conditions of the above obligation are such, that whereas lately at a term of the above-named court held at Seward, in the above-named territory and division on the 28th day of August, 1917, in the above-entitled cause an order, judgment and decree was made, rendered and entered in favor of the above-named defendant H. E. Ellis and against the above-named plaintiffs and principals George C. Treat, Edmund Smith and Logan Archibald dismissing said cause; and the said plaintiffs being about to appeal to the United States Circuit Court of Appeals for the Ninth Circuit [63] to reverse said order, judgment and decree; and said plaintiffs being about to have a citation issued to said defendant citing and admonishing him to be and appear

in the United States Circuit Court of Appeals for the Ninth Circuit for the hearing upon said petition:

NOW, THEREFORE, if the said plaintiffs George C. Treat, Edmund Smith and Logan Archibald shall prosecute their appeal to effect and answer all damages and costs if they fail to make their said plea good, then this obligation to be void; otherwise to remain in full force and effect.

GEORGE C. TREAT,
By ANTHONY J. DIMOND,
His Attorney.
EDMUND SMITH,
By ANTHONY J. DIMOND,
His Attorney.
LOGAN ARCHIBALD,
By ANTHONY J. DIMOND,
His Attorney.
Principals.
NATIONAL SURETY COMPANY OF NEW YORK.
By J. L. REED,
Attorney in Fact.
Surety.
By CHAS. A. HAND,
Attorney in Fact.

The foregoing bond is approved both as to form and sufficiency of surety this 26th day of October, 1917.

FRED M. BROWN,
Judge of the District Court for the Territory of Alaska, Third Division.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division. Oct. 26, 1917. Arthur Lang, Clerk. By John B. Miller, Deputy. [64]

Filed in the District Court, Territory of Alaska, Third Division. Oct. 27, 1917. Arthur Lang, Clerk. By John B. Miller, Deputy.

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Citation on Appeal.

United States of America,
Territory of Alaska,—ss.

The *Present* of the United States of America, to H. E. Ellis, GREETING:

You are hereby cited and admonished to be and appear at the United States Circuit Court of Appeals for the Ninth Circuit to be held at the city of San Francisco, State of California, on the 25th day of November, A. D. 1917, pursuant to an order allowing an appeal filed and entered in the Clerk's office of the District Court of the Territory of Alaska, Third

Division, from a final decree signed, filed and entered in the above-named court in the above-entitled cause on the 28th day of August, 1917, in which the above-named George C. Treat, Edmund Smith and Logan Archibald are appellants and you are respondent and appellee, to show cause why the judgment in said appeal mentioned should not be corrected and that speedy justice should not be done to the parties in that behalf.

WITNESS: The Honorable EDWARD DOUGLAS WHITE, Chief Justice of the Supreme Court of the United States this 26th day of October, in the year of our Lord one thousand nine hundred and seventeen.

FRED. M. BROWN,

Judge of the District Court for the Territory of Alaska, Third Division.

[Seal] Attest: ARTHUR LANG,

Clerk of Said Court.

Service of the foregoing citation by receipt of copy thereof acknowledged at Valdez, Alaska, this 27th day of October, 1917.

L. V. RAY,

Attorney for Appellee, H. E. Ellis. [65]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Stipulation Re Record on Appeal.

IT IS HEREBY STIPULATED by and between Messrs. Donohoe & Dimond, of counsel for plaintiffs above named, and L. V. Ray, attorney for the defendant, as follows:

That in the record upon appeal to be prosecuted by the above plaintiffs it shall be sufficient to refer to the transcript of record in cause No. 2758 of the United States Circuit Court of Appeals for the Ninth Circuit, entitled "H. E. Ellis, Appellant, vs. George C. Treat, Edmund Smith and Logan Archibald, Appellees," for copies of pleadings referred to in paragraph three of the defendant's third affirmative defense on page 10 of defendant's answer in said cause No. 879, to wit:

1. Complaint.
2. Defendant's motion to strike portion of complaint.
3. Order of Court denying motion to strike portions of complaint.

4. Demurrer of defendant.
5. Minute order of Court overruling demurrer of defendant.
6. Answer.
7. Motion to strike portions of answer.
8. Order of Court on plaintiff's motion to strike.
9. Reply.
10. Findings of fact and conclusions of law.
11. Decree dated October 16, 1915.
12. Petition for appeal.
13. Order allowing appeal.
14. Assignment of errors. [66]

The object and purpose of this stipulation being to avoid and save expense attendant upon the printing of the pleadings above described, set out and made a part of defendant's answer, in view of the fact that all of such pleadings are set forth at length in the transcript of record upon appeal in said cause No. 2758, same having already been printed in the record in said cause.

Dated at Seward, Alaska, this 28th day of August, A. D. 1917.

DONOHOE & DIMOND,
Of Counsel for Plaintiffs.
L. V. RAY,
Attorney for Defendant.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division, Oct. 27, 1917. Arthur Lang, Clerk. By John B. Miller, Deputy. [67]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Stipulation Re Transcript of Record.

WHEREAS, the above-named plaintiffs are about to prosecute an appeal to the United States Circuit Court of Appeals for the Ninth Circuit from the judgment, order and decree rendered by the above-named District Court on the 28th day of August, 1917, in the above-entitled cause; and

WHEREAS, said plaintiffs' preparatory to such appeal have had signed and settled their bill of exceptions to be used upon said appeal; and,

WHEREAS, said bill of exceptions contains in its entirety the transcript of the record in Cause No. 2758 of the United States Circuit Court of Appeals for the Ninth Circuit entitled H. E. Ellis, Appellant, vs. Geo. C. Treat, Edmund Smith and Logan Archibald, Appellees; and,

WHEREAS, it will be an unnecessary cost and expense to have printed as a part of plaintiffs' record in their appeal in this cause the said record in Cause No. 2758;

IT IS THEREFORE STIPULATED AND AGREED by and between the parties hereto that so much of said plaintiffs' bill of exceptions to be used in their appeal in this cause as is comprised by and consists of the transcript of record in Cause No. 2758 of the said United States Circuit Court of Appeals for the Ninth Circuit need not be printed as a part of the plaintiffs' record upon appeal [68] in this cause but the said transcript of record in said Cause No. 2758 of said Circuit Court of Appeals, although not printed in plaintiffs' printed record upon their appeal in this cause shall be taken and considered to be a part of said record.

IT IS FURTHER STIPULATED AND AGREED that if it be deemed necessary the plaintiffs may apply to the said United States Circuit Court of Appeals for an order exempting them from printing that part of their record upon appeal in this cause as is contained in and comprised by the record in said Cause No. 2758.

Dated at Valdez, Alaska, on this 22d day of October, 1917.

DONOHOE & DIMOND,
Attorneys for Plaintiffs.
L. V. RAY,
Attorneys for Defendant.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division, Oct. 27, 1917. Arthur Lang, Clerk. By John B. Miller, Deputy. [69]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Stipulation Re Transcript of Record.

It is hereby Stipulated and Agreed by and between the parties hereto as follows, to wit, that the record upon the appeal which the said plaintiffs are about to prosecute to the United States Circuit Court of Appeals for the Ninth Circuit from the judgment of the above-named Court rendered on August 28th, 1917, shall consist of and contain the following pleadings and papers in said cause, to wit:

1. Bill of exceptions as settled, signed and certified by the Hon. Fred M. Brown, Judge of the above-named court on the 27th day of September, 1917, together with the order of said judge settling and certifying the same.
2. Stipulation between plaintiffs and defendant dated the 28th day of August, 1917, relative to the record on appeal.
3. Assignment of errors.
4. Petition for appeal.

5. Petition for order fixing amount of appeal bond.
6. Order allowing appeal and fixing amount of bond.
7. Bond on appeal.
8. Citation on appeal.
9. Stipulation between plaintiffs and defendant exempting plaintiffs from printing as a part of their record on appeal such portion of their bill of exceptions as is comprised by and contained in the record in Cause No. 2758 of said United States Circuit Court of Appeals for the Ninth Circuit.
10. This stipulation.

Dated and signed this 22d day of October, 1917.

DONOHOE & DIMOND,
Attorneys for Plaintiffs.
L. V. RAY,
Attorneys for Defendant.

[Endorsed]: Filed in the District Court, Territory of Alaska, Third Division, Oct. 27, 1917. Arthur Lang, Clerk. By John B. Miller, Deputy. [70]

In the District Court for the Territory of Alaska, Third Division.

No. 879.

GEO. C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Plaintiffs,

vs.

H. E. ELLIS,

Defendant.

Certificate of Clerk U. S. District Court to Transcript of Record.

United States of America,
Territory of Alaska,
Third Division,—ss.

I, Arthur Lang, Clerk of the District Court for the Territory of Alaska, Third Division, do hereby certify that the above and foregoing and hereto annexed 70 pages, numbered from 1 to 70, inclusive, of which page 52 is a copy of the printed record in Cause No. 2758 of the United States Circuit Court of Appeals for the Ninth Circuit, such printed record consisting in itself of 377 printed pages, are a full, true and correct transcript of the records and files of the proceedings in the above-entitled cause, as the same appear of record and on file in my office.

That this transcript is made in accordance with the stipulation of the attorneys for the plaintiffs and defendant, on file herein.

I further certify that the foregoing transcript has been prepared, examined and certified to by me, and that the cost of such preparation, examination and certificate amounting to $29.85 was paid to me by Donohoe & Dimond, of attorneys for plaintiffs and appellants Geo. C. Treat, Edmund Smith, and Logan Archibald.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of this court at Valdez, Alaska, this 5th day of November, A. D. 1917.

[Seal] ARTHUR LANG,
Clerk of the District Court for the Territory of Alaska, Third Division.

[Endorsed]: No. 3082. United States Circuit Court of Appeals for the Ninth Circuit. George C. Treat, Edmund Smith and Logan Archibald, Appellants, vs. H. E. Ellis, Appellee. Transcript of Record. Upon Appeal from the United States District Court for the Territory of Alaska, Third Division.

Filed November 16, 1917.

F. D. MONCKTON,
Clerk of the United States Circuit Court of Appeals for the Ninth Circuit.

By Paul P. O'Brien,
Deputy Clerk.

In the United States Circuit Court of Appeals for the Ninth Circuit.

No. ——

GEORGE C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,

Appellants,

vs.

H. E. ELLIS,

Respondent.

Motion That Bill of Exceptions Consisting of Transcript of Record in Case No. 2758, Ellis vs. Treat et al., Need not be Printed.

Come now the appellants in the above-entitled action, and move the Court that appellants be not required to print or cause to be printed that portion of the Bill of Exceptions herein which consists of the transcript of the record in cause No. 2758 of this Court, and entitled H. E. Ellis, Appellant, vs. George C. Treat, Edmund Smith and Logan Archibald, Appellees, for the following reasons:

1. Because the parties hereto have stipulated that said portion of the Bill of Exceptions need not be printed;

2. Because that portion of the Bill of Exceptions herein has been heretofore printed and the number of copies thereof required by the rules of this Court are now on file in this court.

DONOHOE & DIMOND,
LYONS & ORTON,
Attorneys for Appellants.

[Endorsed]: In the Circuit Court of Appeals for the Ninth Circuit. Geo. C. Treat, Edmund Smith and Logan Archibald, Appellants, vs. H. E. Ellis, Respondent. Motion. Filed Dec. 3, 1917. F. D. Monckton, Clerk.

At a stated term, to wit, the October term, A. D. 1917, of the United States Circuit Court of Appeals for the Ninth Circuit, held in the court-room thereof, in the city and county of San Francisco, in the State of California, on Monday, the third day of December, in the year of our Lord one thousand nine hundred and seventeen. Present: The Honorable WILLIAM W. MORROW, Circuit Judge, Presiding; The Honorable WILLIAM H. HUNT, Circuit Judge.

No. 3082.

GEORGE C. TREAT et al.,

Appellants,

vs.

H. E. ELLIS,

Appellee.

Order Granting Motion That Bill of Exceptions Consisting of Transcript of Record in Case No. 2758, Ellis vs. Treat et al., Need not be Printed.

Upon motion of Mr. Thomas Keohoe, on behalf of counsel for the appellants, and good cause therefor appearing, ORDERED that the appellants be not required to print that portion of the Bill of Exceptions in the above-entitled cause which consists of the Transcript of Record in case No. 2758 in this court, Treat et al. vs. Ellis.

UNITED STATES CIRCUIT COURT OF APPEALS

FOR THE NINTH CIRCUIT

GEORGE C. TREAT, EDMUND SMITH, and LOGAN ARCHIBALD,

Appellants,

vs.

H. E. ELLIS,

Respondent.

No. 3082

Upon appeal from the District Court of the Territory of Alaska, Third Division, Hon. F. M. Brown, Judge.

APPELLANT'S BRIEF

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UNITED STATES CIRCUIT COURT OF APPEALS

FOR THE NINTH CIRCUIT

GEORGE C. TREAT, EDMUND SMITH, and LOGAN ARCHIBALD,

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vs.

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Upon appeal from the District Court of the Territory of Alaska, Third Division, Hon. F. M. Brown, Judge.

APPELLANT'S BRIEF

STATEMENT OF FACTS.

It is stipulated and agreed by and between the parties hereto, by their respective counsel, that certain portions of the record in cause No. 2758 of this court, H. E. Ellis, appellant, vs. George Treat, Edmund Smith and Logan Archibald, appellees, may be considered a part of the record in the hearing

of this cause by this court without the same being reprinted. (Tr. p. 82.) Pursuant to said stipulation, the trial court entered an order embodying said portions of said record in said cause No. 2758 of this court in the Bill of Exceptions herein, by proper reference to such portions of said record (Tr. p. 69), and this court, by order entered herein, directed that the appellants herein be not required to print that portion of the Bill of Exceptions, herein, which consists of the transcript of record in said cause No. 2758.

When reference in this brief is made to the transcript, which refers to the portion of the transcript embodied in cause No. 2758 of this court, the same will be referred to as transcript No. 2758, and when reference is made to the transcript in this cause it will be referred to as transcript No. 3082.

The appellants commenced an action in the District Court of the Territory of Alaska on the 4th day of May, 1915. The complaint in that action alleged substantially the following facts:

That on the 15th day of May, 1907, the defendant was sole owner of eight (8) lode mining claims situated on the northerly side of Valdez Bay be-

tween Gold Creek and Shoups Bay in the Valdez Recording precinct, Territory of Alaska.

That appellee Ellis on the 9th day of July, 1908, was indebted to appellants Treat and Smith, in the sum of seven hundred sixty-one ($761.00) dollars.

That on said last mentioned date, the said appellee, Ellis, as party of the first part, and said Treat and Smith, as parties of the second part, entered into a contract, as follows:

"That the said party of the first part is the owner of eight (8) gold mining claims, situated on the north side of Valdez Bay and about ten (10) miles from Valdez, Alaska, the location certificates of which are of record in the office of the United States Commission at said Valdez, Alaska.

In consideration of the covenants hereinafter mentioned, and to be fully kept and performed by the parties of the second part, the said party of the first part agrees to deed to the Mystic Gold Mining Company, a corporation hereinafter to be formed, the said eight gold mining claims, in consideration of the issuance to him of all of the capital stock of said corporation.

That said first party will then transfer to the parties of the second part twenty (20) per cent of said capital stock, and will turn over to the treasury of the said corporation twenty (20) per cent of said stock to be sold by said treasury as may be directed

by the board of directors of said corporation, the money received from the sale of said twenty (20) per cent of said stock being the treasury stock as aforesaid or so much thereof as may be sold to be used in establishing a reduction plant upon said mining claims and the development of said claims.

That in consideration of the twenty (20) per cent issued to the parties of the second part, the said parties of the second part are to pay all expenses of incorporating said company, recording and filing all necessary papers thereon, and receipt in full all claims that said parties of the second part, or either of them, have against the party of the first part; also to give their time and attention in selling the amount of treasury stock necessary to be sold, and give whatever time and attention that may be necessary to the proper organization of said corporation and the sale of said stock."

That on the execution of said contract, appellants Treat and Smith did release appellee, Ellis, from said indebtedness; that shortly thereafter, appellants Treat and Smith caused to be prepared the necessary papers for the formation of the corporation provided for in said contract, and were ready, able and willing at all times to proceed to the complete formation of said corporation, and to pay all expenses of incorporating said company and recording and filing of all necessary papers in any manner connected therewith, to be done and per-

formed by them under the terms of said contract.

That it was understood and agreed at the time of the execution of said contract that each of the parties thereto was to be one of the incorporators and would sign and execute the articles of incorporation when it was decided to form said corporation. That after the execution of the contract of July 9, 1908, owing to the stringency of the money market and the possible difficulty that would be experienced in selling the treasury stock of said corporation to advantage, it was decided by all of the parties to said contract to await a more opportune time to form said corporation, and while so waiting, during which time appellants Treat and Smith were endeavoring to procure a purchaser for the treasury stock of said corporation when the same should be organized, said appellants Treat and Smith procured from one A. J. Crane an offer to lease the said mining claims.

That thereupon, appellee Ellis and appellants Treat and Smith mutually agreed to hold said contract of July 9, 1908, in abeyance and enter into a contract with said Crane to lease all of said mining claims to said Crane, at which time said appellee

specifically agreed verbally to and with appellants Treat and Smith that at the termination of said lease he would join Treat and Smith in forming the corporation as provided in said contract of July 9, 1908, and would carry out all of the terms of the said contract to be performed by him thereunder, or that he would deed to each of appellants Treat and Smith an undivided one-tenth (1/10) interest in and to each and all of said mining claims. That pursuant to said oral agreement, said appellee, Ellis, and appellants, Treat and Smith, entered into a contract with said Crane, giving and granting to said Crane an option to lease each and all of said mining claims for a period of six (6) years at a rent or a royalty of twenty (20) per cent of net proceeds for the said first year and twenty-five (25) per cent of net proceeds for the remaining term of said lease, and providing that eighty-five (85) per cent of said rent or royalty should be paid appellee Ellis and the remaining fifteen (15) per cent should be paid appellants Treat and Smith. That thereafter, by mesne conveyance, one B. F. Millard became assignee of said Crane in and to said contract, and thereafter on the 23rd day of July, 1909, appellee Ellis and appellants Treat and Smith, as

owners of each and all said mining claims, entered into a lease of each and all said mining claims with B. F. Millard pursuant to the terms of the said contract between said Crane and said appellee Ellis and appellants Treat and Smith. That thereafter the Cliff Mining Company, the assignee of said Millard in said lease, placed on said mining claims a large amount of mining machinery, tools, buildings and equipment of the value of more than thirty thousand ($30,000) dollars, and continued to operate said property under said lease until the 15th day of August, 1914. That the appellants Treat and Smith, as the owners of twenty (20) per cent in said mining claims and under the terms of said lease are now the owners of twenty (20) per cent interest in and to said machinery, tools, buildings and equipment.

That on or about the 3rd day of January, 1913, appellant Logan Archibald purchased from appellant Smith an undivided one-half (½) interest of said Smith's interest in and to each and all of said mining claims and in and to all of the rights and privileges accruing to said Smith by reason of the contract heretofore mentioned and set out, and said

Archibald is now and ever since on or about the 3rd day of January, 1913, has been the owner of the one-half (½) interest formerly belonging to said appellant Smith.

That appellant Treat is now the owner of an undivided one-tenth (1/10) interest; appellant Smith is owner of an undivided one twentieth (1/20) interest, and appellant Archibald is the owner of an undivided one-twentieth (1/20) interest in and to each and all of said mining claims, and in and to all of the machinery, tools, buildings, equipment and improvements thereon. That appellee Ellis, during all of the time hereinbefore mentioned, since the execution of the contract of the 9th day of July, 1908, until about the month of February, 1915, never questioned or disputed the right and title of appellants to said premises and property as therein stated, but during all of the said time recognized and approved said claim of title by appellants as therein stated.

That ever since the surrender of said property by said Cliff Mining Company to the lessors named, the appellants have been ready, able and willing to perform all of the matters and things to be per-

formed by them, pursuant to the contract of July 9, 1908, but appellee Ellis has remained without the Territory of Alaska, residing in the States of Colorado and Montana, and has refused to join the appellants in the organization of said corporation or to deed to appellants an undivided twenty (20) per cent interest in and to each and all of the said mining claims, and during or about the month of February, 1915, appellee disputed the claims of title of appellants, and denied that appellants had any right, title or interest whatever in and to said mining claims, or in and to said machinery, tools, buildings, equipment and improvements. (Tr. No. 2758, pp. 1-27.)

That the appellee's answer in said cause alleges substantially the following facts:

Admits the appellee owned all of the mining claims described in the complaint on July 9, 1908, the date of the contract between appellee and appellants Treat and Smith, to form the corporation; admits the indebtedness of appellee to appellants Treat and Smith on the date of the execution of said contract; admits the execution of the contract between appellee Ellis and appellants Treat and

Smith hereinbefore set forth; denies that appellants Treat and Smith at the time of the execution of said contract released appellee from his indebtedness to them; admits appellants Treat and Smith prepared, or caused to be prepared, the necessary papers for the formation of the corporation provided for in said contract, but denies that appellants Treat and Smith were ready, able and willing at all times to proceed to the complete formation of said contract, and to pay all expenses for incorporation and recording and filing all necessary papers in any manner connected therewith and to perform each and all of the other things to be done and performed by them under the terms of the said contract; denies that appellants Treat and Smith were at any time after the preparation of the necessary papers for the formation of said corporation, either ready, able or willing to proceed to the complete formation of the said corporation or to pay all expenses of the incorporation of said company or to perform all of the other things to be done and performed by them under the said contract, and further denies that it was ever decided by all the parties to said contract to await a more opportune time to form said corporation; denies that while so

awaiting appellants procured one A. J. Crane to offer to lease said mining claims; and denies that the parties thereto agreed mutually to hold said contract in abeyance as stated in appellants' complaint; admits that about June 5, 1909, they agreed to enter into a contract with Crane to lease all of said mining claims to said Crane, but denies that appellee agreed either verbally, or in writing, or at all, that at the termination of said lease he would join said appellants in forming the corporation as provided in said contract, and that he would carry out all of the terms of said contract to be performed by him thereunder; denies that at that time, or any other time, he agreed to deed to each of the appellants an undivided one-tenth (1/10) interest in and to said mining claims or any interest in and to any of said mining claims; admits the entering into the option contract of June 5th, with appellants and said Crane, and admits that B. F. Millard became the assignee of said Crane in and to said contract, and that thereafter appellee and appellants Treat and Smith, on the 23rd day of July, 1909, entered into a lease of all of said mining claims with B. F. Millard pursuant to the terms of the contract between appellee Ellis and appellants Treat and Smith, with

said Crane, but denies that appellants Treat and Smith entered into said contract as part owners of each and all of said mining claims, or any of said mining claims; admits the assignment of said lease by Millard to the Cliff Mining Company, but denies that said Cliff Mining Company operated said mining claim until August 15, 1914, or at any time after the day of July, 1914; alleges that appellee Ellis on or about day of July, 1914, took sole possession of said mining claims and ever since so taking possession thereof, has held said possession adversely to all persons whomsoever, and still continues to hold such possession of said claims and all of said machinery, tools, equipment and improvements placed thereon; admits that said Cliff Mining Company placed upon said claims some valuable mining machinery, tools, equipment and improvements, but denies that the value of said mining machinery, tools, equipment and improvements is of the sum of thirty thousand ($30,000) dollars, or that said value is any sum over five thousand ($5,000) dollars; denies that appellants or any of them are the owners of a twenty (20) per cent interest in and to said tools, machinery, buildings and equipment, or of any interest

therein whatsoever; denies that appellant Treat is the owner of an undivided one-tenth (1/10) interest, and denies that appellant Smith is the owner of an undivided one-twentieth (1/20) interest, and denies that appellant Archibald is the owner of an undivided one-twentieth (1/20) interest in and to each and all of the said mining claims, and in and to all of the machinery, tools, equipment, buildings and improvements thereon; denies that appellants or any of them are the owners of any interest whatsoever in and to said mining claims or in and to any of the said mining claims, or in and to any of the said machinery, tools, equipment, buildings and improvements thereon; denies that appellee during all of the time since the execution of the contract of July 9, 1908, until about the month of February, 1915, or at any other time, recognized or approved any claim of right and title or claims of appellants or any of them in and to said mining claims, or in and to any of the property situated thereon, and alleges that until shortly prior to the commencement of this action, neither of the appellants herein, or any of them, ever claim any right or title in and to said mining claims or in and to said machinery, tools, equipment, buildings and improvements, to the

knowledge of appellee, until about the month of August, 1914, at which time appellant Treat went to said mining claims and asserted a right to enter thereon, but that J. Hughes, agent of the appellee, informed said Treat of his agency, and refused to allow said Treat to enter upon said property, or to take possession of said property or any portion thereof; denies that appellee refused to join appellants in the organization of said corporation, or to deed to appellants an undivided twenty (20) per cent interest to each and all of said mining claims, and alleges that appellants never, during all of the time of his residence out of the Territory of Alaska, or at any time since June 5, 1909, demanded of the appellee to join them in the organization of the said corporation, or to deed to them an undivided twenty (20) per cent interest in the said mining claims; denies that appellee has threatened to and intended to transfer said property, and denies that said transfer, if attempted, would be in violation of the agreement and contract of the appellants, as in the complaint set forth, or of any agreement entered into or existing between appellee and appellants, and denies that he threatened to remove or sell the machinery, tools, buildings and equipment, and denies that ap-

pellants have any right, title or interest in or to said property; alleges that said contract of July 9, 1908, had been abandoned by mutual agreement between the parties thereto, and that it was agreed between the parties that the indebtedness of said appellee to said appellants Treat and Smith was thereupon revived, and that appellants Treat and Smith never, thereafter, to the knowledge of appellee, asserted any right or interest to the mining claims described in the complaint, until the month of June, 1909, at which time, one Crane and Millard were negotiating with appellee with a view of leasing or purchasing the mining claims of the appellee. That shortly prior to the 5th day of June, 1909, appellants Treat and Smith claimed an interest in the property in that their time, labor, and advances to appellee amounted to practically a grubstake, all of which appellee denies; alleges that the fifteen (15) per cent of the royalty to be paid appellants Treat and Smith under the Millard lease was in full satisfaction of all claims and demands of the appellants Treat and Smith against appellee Ellis, and of all claims and demands to any interest in and to any of the mining claims described in the complaint; alleges that appellants Treat and Smith have re-

ceived in royalties from the Cliff Mining Company more than seven thousand ($7,000) dollars; alleges that the only interest or right ever owned or held by appellants Treat and Smith in and to the said mining claims, or any of them, since the 5th day of June, 1909, was to receive, each of them, seven and one-half (7½) per cent of the total royalties paid under the terms of and during the life of said lease, which said interest or right of said appellants Treat and Smith appellee, at all times, acknowledged; that the only interest of the appellant Archibald in and to said mining claims is such interest as said Archibold may have acquired in or to the royalties payable to said Smith under the terms of and during the life of said lease. (Tr. No. 2758, pp. 33-53.)

The reply of appellants denies generally all the new matter set forth in appellee's answer. (Tr. No. 2758, pp. 60 and 61.)

That appellants herein have not set forth the entire contents of the complaint and answer in said action, but have set forth sufficient thereof to enable this court to understand all of the issues in said action. That after a trial of said cause the court rendered a decree in favor of appellants and decreed

that appellant Treat is the owner and entitled to the immediate possession of an undivided one-tenth (1/10) interest; that appellant Smith is the owner of and entitled to the immediate possession of an undivided one-twentieth (1/20) interest; that appellant Archibald is the owner of and entitled to the immediate possession of an undivided one-twentieth (1/20) interest in and to all of the lode mining claims described in the complaint in said action, together with such interests in and to all of the machinery, equipment, tools, buildings and improvements of every kind and nature now upon said mining claims or all of them, and further decreed that appellants recover of and from appellee their costs in said action (Tr. No. 2758, pp. 83, 84, 85); that thereafter, and within the time required by law, the appellee herein prosecuted an appeal to this court, whereupon, after hearing, this court reversed the judgment and decree of the trial court on the grounds that the decree awarded appellants an interest in the mining claims, whereas the action was based on an agreement to transfer personal property, and on the further ground that the contract sued on was too indefinite and uncertain to justify a decree of specific performance, as more fully ap-

pears in the opinion of this court in 236 Fed., p. 120. That thereafter, on or about the 8th day of February, 1917, the appellants herein commenced the present action, which is an action to enforce the specific performance of a contract to convey an undivided one-fifth (1/5) interest in all of the mining claims described in the former action (Tr. No. 3082, pp. 5-13); that the appellee in answer to said complaint set up among other defenses that of *res judicata* (Tr. No. 3082, pp. 27, 28); that to said answer, the appellants filed a reply putting in issue all of the new matter set forth in the answer, except the records in the former action and the identity of the parties in the two actions (Tr. No. 3082, pp. 43-48); that thereafter appellee moved the court to dismiss the action on the ground that his answer of *res judicata* was not fully denied by the reply (Tr. No. 3082, p. 49); that thereafter and on the 28th day of August, 1917, the court sustained said motion and dismissed said action on the ground that the same was barred by the former action; that the defense of *res judicata* was the only defense considered and passed upon by the court, and that the court passed upon said defense and entered judg-

ment of dismissal of this action, without hearing any evidence with reference thereto.

That the answer sets up other defenses, but said defenses are put in issue by the complaint and reply. The appellants will, therefore, confine this brief to a consideration of the defense of *res judicata,* that being the only defense involved in this appeal.

ASSIGNMENT OF ERRORS.

The court erred in making and entering its order and judgment herein on the 28th day of August, 1917, sustaining that portion of defendant's answer which set up as a defense to plaintiffs' complaint, a plea of former adjudication of the same subject matter between the same parties; and decreeing such defense to be a complete and absolute bar and defense to the matters and things alleged in plaintiffs' complaint, and that said complaint does not state facts sufficient to constitute a cause of action; and dismissing said cause on those grounds; the said order and judgment of said District Court being contrary to the law, and unsupported by the pleadings herein, or by any matters of evidence considered by the court and totally unsupported by the record of that certain cause in

the United States Circuit Court of Appeals for the Ninth Circuit, entitled, "*H. E. Ellis, Appellant, vs. George C. Treat, Edmund Smith* and *Logan Archibalt, Appellees,*" being cause No. 2758 of the said Circuit Court of Appeals, which record and the opinion of the judges of the United States Circuit Court of Appeals thereon, reported in Vol. 236, Fed. Rep., at page 120, were considered by the said District Court in entering its said order and judgment.

ARGUMENT.

Appellants contend that the judgment of the trial court dismissing this action is erroneous for the following reasons, to-wit:

1. This action is one for the specific performance of a contract to convey an interest in real estate, while the former action sought the specific performance of a contract for the sale and conveyance of personal property.

2. The complaint in the former action did not state facts sufficient to constitute a cause of action.

Referring to the first reason assigned, why the judgment of the trial court is erroneous, we submit

that there was no contract for an interest in the mining claims described in the complaint in the former action, either alleged or proved. The action was based on the contract of July, 1908 (Tr. No. 2758, pp. 1-27), which this court held to be so indefinite and uncertain as not to justify a decree of specific performance. This court in its former opinion points out briefly but clearly why the decree in the former action could not be sustained. In that opinion, the court, among other things, says:

"The assignments of error bring in question the sufficiency of the complaint to state a cause of suit and the propriety of the decree which was rendered thereon. The decree is clearly erroneous for the reason that it is unsupported by the allegations of the complaint. It does not appear from the complaint that the appellant ever promised or agreed to convey to the appellees Treat and Smith any interest in the mining claims. What the appellant agreed to do was to convey to a corporation thereafter to be formed eight (8) mining claims in consideration of all the stock of the corporation, and thereafter to transfer to the appellees, twenty (20) per cent of the stock. The decree treats the contract as a contract to convey an interest in real estate, which it is not. It is an agreement to transfer personal property. No principle of the law of specific performance is more thoroughly established than that the decree must conform to the precise contract made between the parties." *Ellis vs. Treat,* 236 Fed. 120, at 122 and 123.

The contract of July 9, 1908, which provided for the formation of a corporation, and the conveyance by the appellee of the mining claims described in the complaint to such corporation and the transfer by appellee to the treasury of such corporation twenty (20) per cent of the capital stock of such corporation, and a transfer by the appellee to appellants of twenty (20) per cent of the stock of such corporation in consideration of the appellants cancelling all of their money demands then due against appellee, is the only contract or instrument referred to in the former action which discloses any contractual relations between appellee and appellants. It may be contended by appellee that it was alleged in the former complaint that the defendant promised to carry out the terms of the contract of July 9, 1908; or that he would deed to each of the appellants Treat and Smith an undivided one-tenth (1/10) interest in and to each and all of said mining claims (Tr. No. 2758, p. 9). But it is not alleged in said complaint that at that time, or at any other time, the appellants agreed to accept said interest in said mining claims, nor did the appellants in said action attempt to prove that there was any agreement between themselves and the appellee that the latter would

convey to them any interest in the mining claims, or any of them. We wish, further, however, to call the court's attention to the fact that the portion of the complaint last mentioned was stricken from the complaint on motion of the appellants before the appellee began to put in his defense in said action. (Tr. No. 2758, pp. 215 and 216.)

One of the leading cases in this country on the question of *res judicata* is that of *Cromwell vs. Sac County,* 94 U. S. 351, 24 Lawyers' Edition, 195, which was an action on four bonds of the County of Sac in the State of Iowa, each for one thousand ($1,000) dollars, and four coupons for interest attached to them, each for one hundred ($100) dollars. The bonds were issued in 1860, and were made payable to bearer in the City of New York, in the years 1868-69-70-71, respectively, with annual interest at the rate of ten (10) per cent per annum. To defeat that action, the defendant relied upon the estoppel of a judgment rendered in favor of the County in a prior action brought by one Samuel C. Smith, upon certain earlier maturing coupons, upon the same bonds, accompanied with proof that the plaintiff, Cromwell, was at the time the owner of the coupons in that action, and that the action was

prosecuted for his sole use and benefit. The court said, among other things:

"The questions presented for our determination relate to the operation of this judgment as an estoppel against the prosecution of the present action, and the admissibility of the evidence to connect the present plaintiff with the former action as a real party in interest. In considering the operation of this judgment it should be borne in mind as stated by counsel that there is a difference between the effect of a judgment as a bar or estoppel against the prosecution of a second action upon the same claim or demand, and its effect as an estoppel in another action between the same parties upon a different claim or cause of action. In the former case the judgment if rendered upon the merits constitutes an absolute bar to a subsequent action. It is a finality as to the claim or demand in controversy, concluding parties and those in privity with them not only as to every matter which was offered and received to sustain or defeat the claim or demand, but as to any other admissable matter which might have been offered for that purpose. Thus, for example, a judgment rendered upon a promissory note is conclusive as to the validity of the instrument and the amount due upon it, although it be subsequently alleged that perfect defenses actually existed of which no proof was offered, such as forgery, want of consideration or payment. If such defenses were not presented in the action and established by competent evidence the subsequent allegations of their existence is of no legal consequence. The judgment is as conclusive so far as future proceedings at law are concerned as though the defenses never existed. The language therefore which is so often used that

a judgment estops not only as to every ground of recovery or defense actually presented in the action, but also as to every ground which might have been presented, is strictly accurate when applied to the demand or claim in controversy, such demand or claim having passed into judgment cannot again be brought into litigation between the parties in proceedings at law on any ground whatever.

But where the second action between the same parties is upon a different claim or demand, the judgment in the prior action operates as an estoppel only as to those matters in issue or points controverted upon the determination of which the finding or verdict was rendered. In all cases, therefore, where it is sought to apply the estoppel of a judgment rendered upon one cause of action to matters arising in a suit upon a different cause of action the inquiry must always be as to the point or question actually litigated and determined in the original action; not what might have been thus litigated and determined. Only upon such matters is the judgment conclusive in another action."

The court, further, in the same opinion, said:

"It is not believed that there are any cases going to the extent that because in the prior action a different question from that actually determined might have arisen and been litigated; therefore, such possible question is to be considered as excluded from consideration in a second action between the same parties on a different demand, although loose remarks looking in that direction may be found in some opinions. On principle, a point not in litigation in one action cannot be received as conclusively settled in any subsequent action upon a different

cause, because it might have been determined in the first action."

This court, in *Lim Jew vs. United States,* 196 Fed. 736, at 739, said:

"Where a suit, action or proceeding is sought to be maintained upon the same claim, a previous judgment concerning it, as an estoppel, is very broad in its effect. It concludes every fact necessary to uphold it, and extends not only to matters actually determined, but to every other matter which the parties might have litigated and have had decided as incident to and essentially connected with the subject-matter of the litigation. But the rule is otherwise where the second action or proceeding is sought to be maintained upon a different claim. There the prior judgment will only operate as an estoppel against matters actually litigated, or as to facts distinctly in issue and upon which such judgment is predicated. These principles are well established. *Cromwell vs. County of Sac,* 94 U. S. 351, 24 L. Ed. 195; *White vs. Ladd,* 41 Or. 324, 332, 68 Pac. 739, 93 Am. St. Rep. 732."

This court, in *Miller vs. Margerie,* 170 Fed., page 710, on p. 714, quoted, approvingly the following from *Cromwell vs. Sac, supra:*

"Allegations of an essential character may be omitted in the first declaration and be supplied in the second, in which event the judgment on demurrer in the first suit is not a bar to the second, for the reason that the merits of the cause as disclosed in the second declaration were not heard and

decided in the first action. *Gilman vs. Rives,* 10 Pet. 298, 9 L. Ed. 432; *Richardson vs. Barton,* 24 How. 188, 16 L. Ed. 625; *Aurora City vs. West,* 7 Wall. 225, 8 Sup. Ct. 495, 31 L. Ed. 411; *City of North Muskegon vs. Clark,* 62 Fed. 694, 10 C. C. A. 591; *Spicer vs. United States,* 5 Ct. Cl. 34; *O'Hara vs. Parker,* 27 Or. 156, 39 Pac. 1004."

And this court further said, in said opinion:

"Tested by the principles upheld in the authorities cited, which are not in conflict with *Lindsley vs. Union Silver Star Mining Co.,* 115 Fed. 46, 52 C. C. A. 640, our conclusion is that the matter put directly in issue now is not the same that was put in issue in the former suit, and that the merits of the controversy as disclosed in the last bill were not considered or decided in the first case."

The foregoing language is obviously applicable to the case at bar, for this court, in its opinion in the former case, not only did not pass upon the issues involved in this case, but specifically stated in its opinion that such issues were not involved in the pleadings in that case, and reversed the judgment of the trial court because it treated the pleadings as though the action was one for specific performance of a contract to convey land.

Balch vs. Haas, 73 Fed. 974.

Diettering vs. Nordstrom, 148 Fed. 81.

Ralston Steel Car Co. vs. National Dump Car Co., 222 Fed. 590.

23 Cyc. 1171-1172.

15 R. C. L. pp. 949-955, Sects. 429-431.

Nesbit vs. Riverside, Independent Dist., 144 U. S. 610, at 619 and 620.

Virginia-Carolina Chemical Co. vs. Kerbin, 215 U. S. 252.

In *Radford vs. Myers,* 231 U. S. 725, the court cited with approval the *Cromwell* case, and said, among other things:

"Where the suit in which the former judgment is set up is not upon the identical cause of action the estoppel operates only as to matters in issue or points controverted and actually decided in the former suit.

Judgments become estoppels because they affect matters upon which the parties have been heard, but are not conclusive upon matters not in question or immaterial."

23 Cyc. 1155-1156 and 1157.

Fayhey vs. Esterley Harvesting Co., 55 N. W. 580.

Russell vs. Place, 94 U. S. 606.

Black on Judgments, Vol. 2, Sec. 614.

We will now proceed to discuss the second reason assigned why the court erred in entering judgment of dismissal. This court in the former

action held that the complaint did not state facts sufficient to constitute a cause of suit enforceable in a court of equity, and assigned the following reasons why said complaint was fatally defective. The reasons assigned are:

1. The contract pleaded in the complaint is too indefinite and uncertain to justify a decree of specific performance.

2. The appellee never performed the covenants which were to be kept and performed by them.

3. Even if the contract were specific and certain, within well settled principles which govern specific performance equity should withhold the relief here sought on the ground that the complaint calls for the performance of acts which require the participation of others not parties to the contract or to the suit.

4. While the action is one to compel the creation and organization of a corporation, and the transfer of a portion of its stock after issuance it is so far as the appellee's interest therein is concerned a suit to compel the transfer of stock.

Can it be seriously contended that because the

appellants, misunderstanding their remedy, sought to enforce in equity an unenforceable contract, that they are now barred from maintaining a suit to enforce the specific performance of a contract which is enforceable, and which concerns real estate, while the former contract sought to be enforced concerned personal property?

A very instructive opinion on this question was rendered by this court in *Miller vs. Margerie,* 170 Fed. 710, wherein the court held that a decree dismissing a suit in equity on demurrer on the ground that the bill failed to allege essential facts is not one on the merits and cannot be pleaded in bar to a cause of action stated by an amended bill which supplies such omissions. In that case, the District Court for the First Division of the Territory of Alaska, sustained a demurrer to a complaint; the defendants elected to stand on their complaint and prosecuted an appeal to this court, where the judgment of the trial court was affirmed because the complaint did not state facts sufficient to constitute a cause of suit and the cause was remanded. Complainants thereafter filed an amended bill in the lower court, seeking to cure the omissions in the

original and to meet the views expressed by this court. Defendant filed his answer, pleading, among other defenses, *res judicata,* setting up the former judgment of the court upon the demurrer. Complainants then demurred to that part of the answer containing the plea of *res judicata.* The District Court overruled the demurrer and gave complainants ten (10) days to reply. Complainants elected to stand upon the demurrer, whereupon judgment of dismissal was entered against complainants, who thereafter prosecuted an appeal to this court. In its opinion this court said, among other things:

"Considering these averments, the bill filed in the present suit fairly supplies the principal defects in the original bill, and the lower court ought to have sustained the demurrer to the plea of *res judicata.* While a judgment upon a demurrer may be and often is a judgment on the merits, and is wholly conclusive, yet, as we have seen, the former judgment herein did not go to the real merits of the question that complainants tried to present. They failed only because their pleading did not allege all essential facts. Analogy is found between such a defective pleading and a case where there has been a judgment of nonsuit. A party may go to trial and establish some facts, but does not establish all that are necessary to make a *prima facie* case. Nonsuit is granted. A new action is begun by a complaint that is good. Defendant cannot plead the judgment of nonsuit as a bar to the second action, for the

decision on the first trial has gone no farther than to hold that the plaintiff failed to prove some one or more facts essential to his recovery. So in a judgment rendered as a consequence of sustaining a demurrer, where there has been an insufficient pleading as in the present case, complainant may supply the omissions of his bill by a good pleading, just as plaintiff was permitted to make sufficient proof where he had failed before. Freeman on judgments, Sec. 267; Black on Judgments, Sec. 707."

Neville vs. Shortridge, 79 Pac. 972.

23 Cyc. 1131.

Pepper vs. Donnelly, Kentucky Court of Appeals, 8 S. W. 441.

The complaint in the former action did not state facts sufficient to constitute a cause of suit and a demurrer to the same should have been sustained by the trial court, for the complaint was fatally defective, as has been held by this court. This court held in its opinion that the trial court misconceived the substance of the complaint in that action, for it awarded the appellants an interest in the mining claims when, as this court held, the action was one for the specific performance of a contract to convey personal property. The appellants in that action, after submitting all of their testimony and before the appellee offered any testimony, moved

the court to strike from the complaint all of the material portions of the same which in any way referred to the contract of July, 1908, and the allegation that appellee promised to deed a one-fifth (1/5) interest in the mining claims described in the complaint (Tr. No. 2758, pp. 214 and 215), which motion, against the resistance of appellee, was granted by the trial court. The allegation of the appellants' willingness, readiness and ability to perform their obligations under the contract of July 9, 1908, having been on their motion stricken from the complaint (Tr. No. 2758, pp. 12, 215, 216), a court of equity could not at their instance compel the appellee, the other party to the contract, to specifically perform his part of such contract.

"The doctrine is fundamental that either of the parties seeking a specific performance against the other must show, as a condition precedent to his obtaining the remedy, that he has done or offered to do, or is then ready and willing to do, all the essential and material acts required of him by the agreement at the time of commencing the suit, and also that he is ready and willing to do all such acts as shall be required of him in the specific execution of the contract according to its terms."

4 Pomeroy's Equity Jurisprudence, 3rd Edition, Sec. 1407.

2 Pomeroy's Equitable Remedies, Sec. 805.

Geo. Melies Co. vs. Motion Picture Patents Co., 200 Fed., p. 342.

Cronen vs. Moore, 210 Fed., p. 239.

Rexford vs. Southern Woodland Co., 208 Fed. p. 295.

36 Cyc., p. 693.

Trans. No. 2758, pp. 215 and 216.

The parts of the complaint so stricken by the trial court are found on pages 9, 12 and 13, Tr. No. 2758.

Pepper vs. Donnelly, Kentucky Court of Appeals, 8 S. W. 441.

There was, therefore, nothing left in the complaint which stated a cause of action, much less a cause of action based on a contract between the parties enforceable in equity, and the trial court should have dismissed the action on its own motion.

We, therefore, contend that the complaint in the former action not only did not set up the same cause of action as the complaint in the case at bar, but did not state facts sufficient to constitute any cause of action, and consequently there was not and could not be any adjudication of the merits of either the cause of action attempted to be pleaded in the

former complaint or the cause of action set forth in the complaint in this action.

We respectfully submit the judgment of the trial court should be reversed.

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No. 3082

United States Circuit Court of Appeals

FOR THE NINTH CIRCUIT.

GEO. C. TREAT, EDMUND SMITH and LOGAN ARCHIBALD,
Appellants,

vs.

H. E. ELLIS,
Appellee.

Upon Appeal from the United States District Court for the Territory of Alaska, Third Division.

BRIEF FOR APPELLEE

L. V. RAY,
Counsel for Appellee.

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Upon Appeal from the United States District Court for the Territory of Alaska, Third Division.

Brief for Appellee

STATEMENT OF THE CASE.

In the case of H. E. Ellis, Appellant, vs. George C. Treat, Edmund Smith and Logan Archibald, Appellees, No. 2758, on the docket of the Circuit Court of Appeals, a decision was rendered and is reported in Vol. 236 Federal, page 120. Subsequent to the decision of this Honorable Court, and prior to the entry of judgment in the Alaskan Court, pursuant to remittitur, the appellees in the former case as plaintiffs, instituted another action against the same defendant, H. E. Ellis, concerning the same subject matter, but on a slightly different theory as to a remedy and as to the rights of the various parties.

In the case at bar in the lower court, H. E. Ellis, defendant therein, appellee herein (and for the sake of convenience hereafter the parties will be designated as in the lower court), filed his answer to the complaint of plaintiffs in which he set up among other defenses the defense of *res judicata,*

and under the provisions of equity rule 29, moved the court for a decision in respect to such defense of *res judicata,* and thereafter made and entered its order in said cause sustaining the plea of *res judicata* set up in defendant's answer and ordered the action dismissed. Record page ———.

To such order made dismissing the action, the plaintiffs excepted and prosecuted to this court their appeal thereon.

ARGUMENT.

The matter to be argued before this Honorable Court is as to the correctness of the decision of the lower court herein. By its order such court sustained a plea of *res judicata* entered on behalf of the defendant in such action, and further ordered the dismissal of the cause. In view of the fact of the recent decision of this Honorable Court concerning the same subject matter and between the same parties, counsel for defendant will make no elaborate argument.

At the outset, we desire to call the attention of the court to the similarity of the two complaints in the two actions. A comparison will demonstrate that except for the relief demanded in the second action, the causes are practically identical and that in such relief so referred to but one clause differs from the prayer for relief in the first action.

It is the contention of the defendant that the decision of this court, reported in 236 Fed. 120, is a final determination and adjudication of all of the rights existing between the parties in respect to those matters and things adjudicated in the first action as well as any other matter, thing or con-

troversy growing out of the same state of facts and circumstances which might have been presented and determined in such first or former litigation; that the defendant is entitled to have litigation concerning this same subject matter and growing out of the same state of facts and circumstances brought to an end. Merely because counsel for the opposite parties desire to present a different theory, the defendant should not be subjected to further extensive and expensive litigation to enable a test to be made as to whether the theory of counsel is sound or otherwise.

As we understand the elementary principles of the rule of *res judicata,* the purpose and object of such rule is to put an end to litigation between the same parties, concerning the same subject matter. I can find no better statement of the effect to be given to such doctrine, or rule, than that contained in the case of Hart Steel Co. and Guilford S. Wood, Petitioners, vs. Railroad Supply Co., 244 U. S. 294, p. 299, 61 Law Ed. 1148, p. 1153, as follows:

> "This doctrine of *res judicata* is not a mere matter of practice or procedure inherited from a more technical time than ours. It is a rule of fundamental and substantial justice, 'of public policy and private peace,' which should be cordially regarded and enforced by the courts to the end that rights once established by the final judgment of a court of competent jurisdiction shall be recognized by those who are bound by it in every way, wherever the judgment is entitled to respect.
>
> Kessler v. Eldred, 206 U. S. 285, 51 Law Ed. 1065."

It is the contention of counsel that it is fundamental that parties asking relief in courts of equity must bring forward their entire case and clearly state the details of the controversy, and if they do not so elect, they are estopped from again litigating the same question by raising some point in respect of matter which might have been brought forward as part of the subject in controversy, but which was not brought forward by reason of negligence, inadvertence, or accident.

From an examination of the opinion in the case of Ellis vs. Treat, 236 Fed. 120, page 123, it is apparent that the appellate court, under the general prayer for such other and further relief, considered the entire case upon all of the facts as shown by the record. The language being as follows:

> "It remains to be considered whether, under the allegations of the bill, and the prayer for such other and further relief as may be just and equitable, the appellees are entitled to a decree for the specific performance of the contract which they pleaded. There are several reasons why such relief must be denied them."

We respectfully call the court's attention to the fact that the mandate in cause No. 2758 did not remand the case for further proceedings with privilege to amend, or file supplemental bill, but directed, without qualification, the dismissal of the case, not the dismissal of the bill of complaint as not stating facts sufficient to constitute a cause of action as by plaintiffs in this action claimed.

Specific attention of the court is requested to the case of Dowell vs. Applegate, 152 U. S. 327, 38 Law

ed. 463, the 4th section of the syllabi being as follows:

> "A judgment estops not only as to every ground of recovery or defense actually presented in the action, but also as to every ground which might have been presented."

One of the leading cases cited by Mr. Justice Harlan therein is the case of Cromwell vs. Sac. County, 94 U. S. 351, 24 Law ed. 195. On this principle, nothing can be gained by collecting the cases in large numbers, as is easily done from digests and foot notes to text books. Counsel does, however, cite the following cases as supporting the contention made before this court in respect to the doctrine of *res judicata:*

Fayerweather vs. Ritch, 91 Fed 721;
Manhattan Trust Co. vs. Trust Co. etc., 107 Fed 328;
McCulloch vs. Davenport Savings Bank, 226 Fed. 309;
Union Central Life Ins. Co. vs. Drake, 214 Fed. 536;
Dana vs. Morgan, 219 Fed. 313;
Fellows vs. Bordens Condensed Milk Co., 188 Fed. 863;
Landon vs. Bulkley, 95 Fed. 344;
Strottman vs. Railway Company, 30 L. R. A. N. S. 377 (note);
Tood vs. Bettingen, 18 L. R. A. N. S. 263 (note).

For the convenience of the court I set forth herein the following quotation from the opinion by Mr. Justice Field in the case of Cromwell vs. Sac. County, 94 U. S. 351, 24 Law ed. 195, quoting from

the case of Henderson vs. Henderson, 3 Hare 100, p. 115, as follows:

> "In trying this question, I believe I state the rule of court correctly, that when a given matter becomes the subject of litigation in and of adjudication by a court of competent jurisdiction, the court requires the parties to bring forward their whole case, and will not, except under special circumstances, permit the same parties to open the same subject of litigation in respect of matter which might have been brought forward as part of the subject in controversy, but which was not brought forward, only because they have, from negligence, inadvertence, or even accident, omitted part of the case. The plea of *res judicata* applies, except in special cases, not only to the points upon which the court was required by the parties to form an opinion, and pronounces a judgment, but to every point which properly belonged to the subject of litigation, and which the parties, exercising reasonable diligence, might have brought forward at the time."

As a general summary of the rule and the principles governing the same, the following excerpt from the opinion given in the case of Union Central Life Ins. Co. vs. Drake, 214 Fed. 536, cited in the case of McCulloch vs. Davenport Savings Bank, 226 Fed. 309, as follows:

> "In Union Central Life Co. vs. Drake, 214 Fed. 536, 131 C. C. A. 82, Justice Sanborn in a very instructive opinion says:
>
> Rule 1. 'The rules of estoppel by which this contention must be tested are: When the second suit is upon the same cause of action and between the same parties as the first, the judgment in the former is conclusive in the latter as to

every question which was or might have been presented and determined in the former.'

Rule 2. 'When the second suit is upon a different cause of action, but between the same parties as the first, the judgment in the former action operates as an estoppel in the latter as to every point and question which was actually litigated and determined in the first action, but it is not conclusive relative to other matters which might have been, but were not, litigated or decided. Cromwell v. Sac. County, 94 U. S. 351, 24 L. ed. 195; Grider v. Groff, 202 Fed. 685, 689; 121 C. C. A. 95, 99; Linton v. Life Ins. Co., 104 Fed. 584, 587; 44 C. C. A. 54, 57; Commissioners v. Platt, 79 Fed. 567, 571; 25 C. C. A. 87, 91; Board v. Sutliff, 38 C. C. A. 167, 171; 97 Fed. 270, 274; Southern Pac. Co. v. United States, 168 U. S. 1, 48, 18 Sup. Ct. 18, 42 L. ed. 355; Southern Minn. Ry. Extension Co. v. St. Paul, S. C. R. Co., 55 Fed. 690; 5 C. C. A. 249.'

In Southern Pac. R. R. Co. v. United States, 168 U. S. 1, 18 Sup. Ct. 18, 42 L. ed. 355, it is said:

'The general principle announced in numerous cases is that a right, question, or fact distinctly put in issue and directly determined by a court of competent jurisdiction as a ground of recovery cannot be disputed in a subsequent suit between the same parties or their privies. And even if the second suit is upon a different cause of action, the right, question, or fact so determined must, as between the parties or their privies, be taken as conclusively established so long as the judgment remains unmodified. This rule, said Mr. Justice Harlan, in Southern Pacific R. R. Co. vs. United States, above, 168 U. S. at page 149, 18 Sup. Ct. at page 27, 42 L. ed. 355, is demanded for the very object for which civil courts have been established, which is to secure the peace and repose of society by the settlement of matters capable of judicial determination.

The contention of the defendant cannot be sustained.

'Any right, fact, or matter in issue, and directly adjudicated upon, or necessarily involved in the determination of an action before a competent court, in which a judgment or decree is rendered upon the merits, cannot again be litigated between the parties and privies, whether the claim or demand, purpose or subject-matter of the two suits be the same or not. The doctrine of *res judicata* applies, and treats the final determination of the action as speaking the infallible truth as to the rights of the parties as to the entire subject of the controversy, and every part of it must stand irrevocably closed by such determination.' 24 Am. & E. Ency. of Law, pages 710-712.

'This estoppel extends, not only to every material fact within the issues which are expressly litigated and determined, but also to those matters which, although not expressly determined, are comprehended and involved in the thing expressly stated and decided. Hence it is not necessary to the conclusiveness of a former judgment that issues should have been taken upon the precise point controverted in the second action. Any conclusion which the court or jury must evidently have arrived at in order to reach the judgment or verdict rendered will be fully concluded.' 24 American & E. Ency. of Law, page 766."

As supporting the action of the lower court in passing upon the defense of *res judicata,* under Equity Rule 29, without consideration of other matters pleaded in defense and without a formal trial of the cause, counsel cites:

Boyd et al. vs. New York & H. R. Co. et al., 220 Fed. 174.

Counsel, therefore, submits the action of the lower court in sustaining the plea of defendant of *res judicata,* and decreeing the dismissal of the action should be in all respects affirmed.

Respectfully submitted,

L. V. Ray,
Counsel for Defendant and Appellee.

No. 3084

United States

Circuit Court of Appeals

For the Ninth Circuit.

Apostles on Appeal.

(IN TWO VOLUMES.)

CLINTON J. HUTCHINS,

Appellant,

vs.

AMERICAN STEAMSHIP "GREAT NORTHERN," Her Engines, Boilers, Tackle, Apparel, Boats, Furniture and Appurtenances, and A. AHMAN, Master, Bailee and Claimant Thereof, and THE GREAT NORTHERN PACIFIC STEAMSHIP COMPANY, a Corporation, Owners Thereof,

Appellees.

VOLUME I.
(Pages 1 to 384, Inclusive.)

Upon Appeal from the United States District Court for the District and Territory of Hawaii.

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THOMPSON & CATHCART and GEO. A. DAVIS,

Campbell Block, Honolulu, Address of Thompson & Cathcart.

#203 Bank of Hawaii Building, Honolulu, Address of Geo. A. Davis.

For the Libelee: The American Steamship "Great Northern," Her Engines, etc., and A. Ahman, Master Thereof.

SMITH, WARREN & WHITNEY, #210 Bank of Hawaii Building, Honolulu. [1*]

In the District Court of the United States, in and for the District and Territory of Hawaii.

ADMIRALTY—No. 147.

CLINTON J. HUTCHINS,

Libellant,

vs.

The S. S. "GREAT NORTHERN," etc.,

Libellee.

Order Extending Time to June 16, 1917, to Transmit Record on Appeal.

Now, on this 16th day of May, A. D. 1917, it appearing from the representations of the clerk of this Court that it is impracticable for said clerk to pre-

*Page-number appearing at foot of page of original certified Apostles on Appeal.

pare and transmit to the clerk of the Ninth Circuit Court of Appeals, at San Francisco, California, the transcript of the record on assignment of errors in the above-entitled cause, within the time limited therefor by the citation heretofore issued in this cause, it is ordered that the time within which the clerk of this Court shall prepare and transmit said transcript of the record on assignment of errors in this cause, together with the said assignment of errors and all papers required by the praecipe of plaintiff in error herein, to the clerk of the Ninth Circuit Court of Appeals, be, and the same is hereby extended to June 16, 1917.

Dated May 16, 1917.

HORACE W. VAUGHAN,
Judge, United States District Court.

Filed May 16, 1917, at —— o'clock and —— minutes ——, M. A. E. Harris, Clerk. Wm. L. Rosa, Deputy Clerk. R. [2]

In the District Court of the United States, in and for the District and Territory of Hawaii.

No. 147.

CLINTON J. HUTCHINS,

Libellant,

vs.

The S. S. "GREAT NORTHERN," etc.,

Libellee.

Order Extending Time to July 31, 1917, to Transmit Record on Appeal.

Now, on this 16th day of June, A. D. 1917, it appearing from the representations of the clerk of this court that it is impracticable for said clerk to prepare and transmit to the clerk of the Ninth Circuit Court of Appeals, at San Francisco, California, the transcript of the record on assignment of errors in the above-entitled cause, within the time limited therefor by the citation heretofore issued in this cause, it is ordered that the time within which the clerk of this court shall prepare and transmit said transcript of the record on assignment of errors in this cause, together with the said assignment of errors and all papers required by the praecipe of plaintiff in error herein, to the clerk of the Ninth Circuit Court of Appeals, be, and the same is hereby extended to July 31, 1917.

Dated Honolulu, T. H., June 16th, 1917.

HORACE W. VAUGHAN,
Judge, United States District Court.

Filed June 16, 1917, at —— o'clock and —— minutes ——, M. A. E. Harris, Clerk. Wm. L. Rosa, Deputy Clerk. [3]

[Endorsed]: No. 147. In the United States District Court, Territory of Hawaii. Clinton J. Hutchins, Libellant, vs. The S. S. "Great Northern," etc., Libellee. Order Extending Time to Transmit Record on Appeal. Filed June 17, '17, at —— o'clock and —— minutes ——, M. A. E. Harris, Clerk. By Wm. L. Rosa, Deputy Clerk.

In the District Court of the United States, in and for the District and Territory of Hawaii.

No. 147.

CLINTON J. HUTCHINS,

Libellant,

vs.

The S. S. "GREAT NORTHERN," etc.,

Libellee.

Order Extending Time to August 16, 1917, to Transmit Record on Appeal.

Now, on this 31st day of July, A. D. 1917, it appearing from the representations of the clerk of this court that it is impracticable for said clerk to prepare and transmit to the clerk of the Ninth Circuit Court of Appeals, at San Francisco, California, the transcript of the record on assignment of errors in the above-entitled cause, within the time limited therefor by the citation heretofore issued in this cause, it is ordered that the time within which the clerk of this court shall prepare and transmit said transcript of the record on assignment of errors in this cause, together with the said assignment of errors herein, to the clerk of the Ninth Circuit Court of Appeals, be, and the same is hereby extended to August 16th, 1917.

Dated Honolulu, T. H., July 16, 1917.

J. B. POINDEXTER,

Judge, United States District Court.

Filed July 16, 1917, at —— o'clock and —— minutes ——, M. A. E. Harris, Clerk. By Wm. L. Rosa, Deputy Clerk. [4]

In the District Court of the United States, in and for the District and Territory of Hawaii.

No. 147.

CLINTON J. HUTCHINS,

Libellant,

vs.

The S. S. "GREAT NORTHERN," etc.,

Libellee.

Order Extending Time to September 16, 1917, to Transmit Record on Appeal.

Now, on this 16th day of August, A. D. 1917, it appearing from the representations of the clerk of this court that it is impracticable for said clerk to prepare and transmit to the clerk of the Ninth Circuit Court of Appeals, at San Francisco, California, the transcript of the record on assignment of errors in the above-entitled cause, within the time limited therefor by the citation heretofore issued in this cause, it is ordered that the time within which the clerk of this court shall prepare and transmit said transcript of the record on assignment of errors in this cause, together with the said assignment of errors herein, to the clerk of the Ninth Circuit Court of Appeals, be, and the same is hereby extended to September 16, 1917.

Dated Honolulu, T. H., August 16th, 1917.

HORACE W. VAUGHAN,
Judge, United States District Court. [5]

[Endorsed]: 147. In the U. S. District Court, Territory of Hawaii. Clinton J. Hutchins vs. The S. S. "Great Northern." Order Extending Time to Transmit Record on Appeal. Filed Aug. 16, '17, at —— o'clock and —— minutes —— M. A. E. Harris, Clerk. Wm. L. Rosa, Deputy Clerk.

In the District Court of the United States, in and for the District and Territory of Hawaii.

No. 147.

CLINTON J. HUTCHINS,

Libellant,

vs.

The S. S. "GREAT NORTHERN," etc.,

Libellee.

Order Extending Time to October 16, 1917, to Transmit Record on Appeal.

Now, on this 14th day of September, A. D. 1917, it appearing from the representations of the clerk of this court that it is impracticable for said clerk to prepare and transmit to the clerk of the Ninth Circuit Court of Appeals, at San Francisco, California, the transcript of the record on assignment of errors in the above-entitled cause, within the time limited therefor by the citation heretofore issued in this cause, it is ordered that the time within which

the clerk of this court shall prepare and transmit said transcript of the record on assignment of errors in this cause, together with the said assignment of errors and all papers required by the praecipe of plaintiff in error herein, to the clerk of the Ninth Circuit Court of Appeals, be, and the same is hereby extended to October 16, 1917.

HORACE W. VAUGHAN,
Judge, United States District Court.

Filed Sept. 14, '17, at —— o'clock and —— minutes —— M. A. E. Harris, Clerk. By Wm. L. Rosa, Deputy Clerk. [6]

In the District Court of the United States, in and for the District and Territory of Hawaii.

No. 147—(ADMIRALTY).

CLINTON J. HUTCHINS,
Libellant,

vs.

The S. S. "GREAT NORTHERN," etc.,
Libellee.

Order Extending Time to November 16, 1917, to Transmit Record on Appeal.

Now, on this 16th day of October, A. D. 1917, it appearing from the representations of the clerk of this court that it is impracticable for said clerk to prepare and transmit to the clerk of the Ninth Circuit Court of Appeals, at San Francisco, California, the transcript of the record on assignment of errors

in the above-entitled cause, within the time limited therefor by the citation heretofore issued in this cause, it is ordered that the time within which the clerk of this court shall prepare and transmit said transcript of the record on assignment of errors in this cause, together with the said assignment of errors and all papers required by the praecipe of plaintiff in error herein, to the clerk of the Ninth Circuit Court of Appeals, be, and the same is hereby extended to November 16th, 1917.

HORACE W. VAUGHAN,
Judge, United States District Court.

Filed Oct. 16, 1917, at 2 —— o'clock and —— minutes —— M. A. E. Harris, Clerk. Wm. L. Rosa, Deputy Clerk. [6a]

In the District Court of the United States, in and for the District and Territory of Hawaii.

No. 147—ADMIRALTY.

CLINTON J. HUTCHINS,
Libellant,

vs.

The S. S. "GREAT NORTHERN," etc.,
Libellee.

Order Extending Time to November 30, 1917, to Transmit Record on Appeal.

Now, on this 8th day of November, A. D. 1917, it appearing from the representations of the clerk of this court that it is impracticable for said clerk to

transmit to the clerk of the Ninth Circuit Court of Appeals, at San Francisco, California, the transcript of the record on assignment of errors in the above-entitled cause, within the time limited therefor by the citation heretofore issued in this cause, it is ordered that the time within which the clerk of this court shall transmit said transcript of the record on assignment of errors in this cause, together with the said assignment of errors and all papers required by the praecipe of plaintiff in error herein, to the clerk of the Ninth Circuit Court of Appeals, be, and the same is hereby extended to November 30, 1917.

Dated November 8th, 1917.

HORACE W. VAUGHAN,
Judge, United States District Court.

Filed Nov. 8, 1917, at —— o'clock and —— minutes —— M. A. E. Harris, Clerk. By Wm. L. Rosa, Deputy Clerk. **[6b]**

In the District Court of the United States, in and for the District and Territory of Hawaii.

ADMIRALTY—No. 147.

CLINTON J. HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," Whereof A. AHMAN is Master and Captain, Her Tackle, etc.,

Libellee.

Clerk's Statement Under Admiralty Rule 4.

TIME OF COMMENCEMENT OF SUIT.

April 4, 1916: Verified libel was filed and monition was issued to the United States Marshal for the District of Hawaii.

NAMES OF ORIGINAL PARTIES.

Libellant: Clinton J. Hutchins.

Libellee: The American Steamship "Great Northern," whereof A. Ahman, whose full name is unknown, is and was lately master and captain, her tackle, apparel, furniture, boats and appurtenances and against all persons having or claiming to have any interest therein and against all persons lawfully intervening in their interests therein.

DATES OF FILING OF PLEADINGS.

April 4, 1916: Libel.

April 4, 1916: Claim.

November 23, 1916: Claimant's answer.

February 23, 1916: Amendment to libel.

February 26, 1917: Claimant's answer to amendment to libel. [7]

ATTACHMENT OF PROPERTY AND PROCEEDINGS THEREUNDER.

April 4, 1916: Monition was issued and delivered to the United States Marshal for the District of Hawaii. Said monition was thereafter returned in court with the following return by the said marshal. "Received the within monition on the 4th day of April, 1916, and return the same as executed upon

the American steamship 'Great Northern' by exhibiting original monition to Chief Officer Wall of said vessel (he being in charge), and by handing to and leaving with him a certified copy of monition and by posting public notices of attachment on the foremast and mainmast of said vessel, and by leaving Manuel Olsen in charge as Custodian, this 4th day of April, 1916. (Sgd.) J. J. Smiddy, U. S. Marshal. Received the within monition on the 4th day of April, 1916, and return the same as executed upon F. L. Waldron & Co., Ltd., agents for the American Steamship 'Great Northern' by exhibiting original monition to Fred L. Waldron, president of F. L. Waldron & Co., Ltd., and by handing to and leaving with him a certified copy of monition, this 4th day of April, 1916. (Sgd.) J. J. Smiddy, U. S. Marshal."

April 4, 1916: Claim filed by A. Ahman, master of said "Great Northern," her tackle, etc., with a bond for the release of the said American steamship "Great Northern," in the sum of thirty thousand dollars ($30,000), which amount is double the amount of the Libel, as per section 941 of the Revised Statutes of the United States, whereupon a release to the United States marshal for the District of Hawaii was issued by the Clerk of said Court.

TIME WHEN TRIAL WAS HAD.

The above-entitled cause came on regularly for trial in the United States District Court for the Territory of Hawaii, before [8] the Honorable Horace W. Vaughan, Judge of said District Court on the following days, to wit: February 16, 1917; Feb-

ruary, 17, 1917; February 19, 1917; February 20, 1917; February 21, 1917; February 26, 1917; February 27, 1917; March 1, 1917.

At the trial of said cause the following witnesses were examined *viva voce* and gave their evidence in open court before the said Judge of said court, to wit: Witnesses called on behalf of the libellant: Clinton J. Hutchins, Libellant, Dr. Clifford B. Wood, Dr. W. C. Hobdy, Dr. George F. Straub, Herbert E. Wescott, John S. Ford, John George Harrington, Robert B. Hackett.

Witnesses called on behalf of the libellee: William Paul Metzler, J. B. Morris, Capt. A. Ahman, Joseph Gould, Thomas S. Mills, Robert Booth, Frederick Lamb, Robert J. McAdory, John Waterhouse, J. W. Waldron.

April 3, 1917: Decision by Vaughan, Judge.

April 11, 1917: Decree, signed by Vaughan, Judge.

April 13, 1917: Notice of appeal.

April 18, 1917: Bond on appeal and for costs and staying execution.

April 16, 1917: Assignment of errors. [9]

Clerk's Certificate to Statement Under Admiralty Rule 4.

United States of America,
Territory of Hawaii,—ss.

I, A. E. Harris, Clerk of the United States District Court for the Territory of Hawaii, do hereby certify the foregoing to be a full, true and correct statement showing the time of commencement of the above-entitled cause; the names of the original parties

thereto and those who have become parties, before the appeal; the several dates when the respective pleadings were filed; an account of the proceedings showing attachment of the said vessel and her release under bonds; the time when the trial was had and the name of the Judge hearing the same; the date of entry of the final decree and the date when the notice of appeal was filed, in said cause.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said District Court

November

A. E. H. this 8th day of ~~October,~~ A. D. 1917.

[Seal] A. E. HARRIS,

Clerk, U. S. District Court, Territory of Hawaii.

[10]

In the District Court of the United States, in and for the Territory and District of Hawaii.

IN ADMIRALTY—LIBEL IN REM.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," Whereof A. AHMAN, Whose Full Name is Unknown, is and Was Lately Master and Captain, Her Tackle, Apparel, Furniture, Boats and Appurtenances and Against All Persons Having or Claiming to Have Any Interest Therein and Against All Persons Lawfully Intervening in Their Interests Therein,

Libellee.

Libel in Rem.

To the Honorable CHARLES F. CLEMONS, Judge of the District Court of the United States, in and for the District of Hawaii:

The libel of Clinton J. Hutchins, now of said Territory and District, late a passenger on board the steamship "Great Northern," whereof A. Ahman, now is and lately was master and captain, against the said steamship, her tackle, apparel, furniture, boats and appurtenances, and the freight due for her cargo, now or lately laden therein; and against all persons having or claiming any interest therein and against all persons lawfully intervening in their interests therein, in [11] a cause of damages, civil and maritime, alleges as follows:

1. This libellant shows that he is forty-six years of age and a married man; that he is now engaged in the brokerage business and has been so engaged for over five months last past, and for some years prior hereto has been engaged in the sale and placing of farm lands and properties, as well as in the brokerage business, as above set forth; that his said business requires his active, physical exertion, as well as mental activities necessarily required in such pursuits; that from his said business, libellant has earned and made large sums of money; that libellant's place of business is in San Francisco, State of California, and the properties which he is selling and disposing of are located in the State of California; that the income of libellant from the business pursuits above set forth when he can devote his active, physical and

mental exertions thereto averages a sum in excess of Fifteen Hundred Dollars a month.

2. That on or about the 14th day of February, 1916, libellant, together with his wife, took passage on the American steamship "Great Northern," then lying at the port of San Francisco, in the State of California, for a voyage to the port of Honolulu, in the Territory and District of Hawaii, and return therefrom to the said port of San Francisco; that the passage so engaged and taken by said libellant was a first-class passage, and libellant paid the full first-class rates charged for the same; that in consideration of the payment of such passage money, the said libellant was to be provided with a first-class passage, and with first-class accommodations; that it then and there became and was the duty due and owing from the said steamship "Great Northern," its owners and officers, to provide this libellant with a safe passage, as above set forth, and to provide on [12] said steamship "Great Northern" safe and proper appliances and equipment so that libellant could make said passage and voyage in safety and without harm or injury to himself; that in consideration of the money paid for such first-class passage, and by reason of the agreement under which the said libellant embarked as passenger on board said steamship "Great Northern," the said libellant was to be furnished with a safe and proper place for bathing, and it then and there became and was the duty of the libellee, its owners and officers, to furnish and provide for the use of the libellant a safe and proper bath-room, with

safe and proper equipment and appliances for the bath.

3. That in violation of the agreements and duties above set forth, and with a reckless disregard of the rights of this libellant, and negligently and carelessly the said bath-rooms on the said steamship "Great Northern" were so negligently constructed that they were dangerous and were unsuitable for the purposes of bathing; that more especially the rooms fitted up as and for shower-baths on the said steamship "Great Northern" were carelessly and negligently constructed so that the same were dangerous and unsuitable for the purposes of taking a shower-bath therein; that the base or bottom of said shower-baths was a porcelain bowl about two feet or so square, with sides from three to four inches high, with a slight depression in the center, and a slope thereto from all directions to the drain in the center of the bowl; that the sides of said shower-baths were constructed of marble slabs, with service pipes for both hot and cold water running up the side of one of said marble slabs; that in order to reach and enter the bath, it was necessary to step over the top of the rim of the bowl; that by reason of said construction, the bowl was slippery and difficult to stand upon and in; that there [13] was no provision made by means of rails or otherwise for grasping or holding on in case of slipping, nor was there any provision made by rubber mats, or otherwise, to prevent slipping and falling in the said baths; that at all times, and more especially when wet, the said bowls became slippery and dangerous, and the equipment

and lack of equipment, as aforesaid, were such as to cause a person entering therein to fall; that the construction and equipment and lack of equipment, as above set forth, made and rendered the said shower-baths unsafe and dangerous, and the construction and equipment, and lack of equipment, as above set forth, was negligent and careless as was to said libellee, its owners and officers, then and there well known. But that notwithstanding such negligent and faulty construction, equipment and lack of equipment, and notwithstanding the dangerous character thereof, the said baths were held out and made known to all passengers, and more especially to this libellant as proper and safe baths, both in construction and equipment.

4. That on the morning of the 18th day of February, 1916, while on board the libellee, the steamship "Great Northern," on the voyage from San Francisco to Honolulu, as aforesaid, and between the ports of San Pedro and Hilo, in the Territory and District of Hawaii, this libellant relying on the representation and agreement aforesaid that the said shower bath-rooms were safe and usable, entered one of the said shower-baths for the purpose of taking a shower-bath therein; that for such purpose, he had been duly called by the bath steward in charge of said shower-bath, and just as this libellant entered the shower-bath room, the said steward turned the water on therein; that without any fault or negligence on the part of this libellant, as he stepped [14] up over the rim of the porcelain bowl aforesaid, and as soon as his feet were on the porcelain bowl, by reason

of the slipperiness of the same, and by reason of the faulty construction, as above set forth, and because of the negligent and careless construction thereof, this libellant slipped and fell; that reason of the faulty, negligent and improper construction thereof, there was nothing in said bath-room by which this libellant could *safe* himself from falling by grasping or taking hold of any rail or other holding place; that this libellant was thrown heavily on his left side, and his left hand struck in the bowl of the bath opposite to the one he had entered, and the construction of which was of the same kind, and his hand slipping on the slippery porcelain bowl, and the weight of his body coming on his arm, the left shoulder joint of libellant was fractured and this libellant sustained severe injuries and bruises and a severe shock to his nervous system. And this libellant so fell and so received such injuries and bruises and shock, by and through the carelessness and negligence of the libellee, its owners and officers, and without fault or negligence on his part.

5. That by reason of the broken shoulder joint and injuries, bruises and shock as above set forth, this libellant suffered and still suffers great pain; that by reason of the broken shoulder joint as aforesaid, the left arm of libellant will always be shorter by about an inch than its normal length, and shorter than the right arm of this libellant, and will disfigure this libellant; that libellant has been unable since his fall and injury, as aforesaid, to use his left arm, and it will be a long time before he can use the said arm at all and the injury thereto was such as may result in

the loss of the use of the said arm. That owing, through and because of his said broken arm, and the injuries, [15] bruises and shock so by him sustained, as aforesaid, this libellant was unable to continue on his return voyage to San Francisco, as he had contemplated, and was unable to leave on the return sailing day of the steamship "Great Northern," to wit, February 26, 1916, and was obliged to and did remain in Honolulu ever since his arrival as set forth, and thereby suffered great loss in his business affairs, and by reason of his said broken arm and injuries, bruises and shock, sustained by him, as aforesaid, this libellant has been and is now unable properly to attend to his business, and has and is sustaining great loss by reason of his inability to attend to his said business. That this libellant by reason of his said broken shoulder joint, and of the injuries, bruises and shock sustained by him, as above set forth, has been put to and incurred great expense for medical attendance and treatment, amounting to at least the sum of $300. That by reason of his said broken shoulder joint and injuries, bruises and shock, so sustained by him, as above set forth, this libellant was put to great expense in necessarily remaining in Honolulu to an amount of at least $400.

That by reason of his said broken shoulder joint and bruises and injuries, shock, suffering and pain, and by reason of all the premises, libellant has suffered and sustained damages in the amount of $15,700.

6. That the said broken shoulder joint and bruises, shock, suffering and pain, and all and singu-

lar the premises, are true and were occasioned, caused and brought about by reason of the carelessness and negligence of the said libellee, the steamship "Great Northern," and her owners and master, and without fault, want of care or negligence on the part of said libellant. [16]

WHEREFORE, libellant prays that process in due form of law according to the course of this Honorable Court in cases of admiralty and maritime jurisdiction, may issue against said American steamship "Great Northern," her tackle, apparel, furniture, boats and appurtenances, cargo and freight money, and against all persons having or claiming to have any interests therein, and against all persons lawfully intervening in their interests therein, that they may be cited to appear and answer all the matters aforesaid, and that this Honorable Court would be pleased to decree the payment of the sum and amount of $15,700 to this libellant, as and for damages by reason of the premises aforesaid, together with costs, and that the said steamship may be condemned and sold to pay the same, and that the libellant aforesaid may have such other and further relief in the premises as in law and justice he may be entitled to receive.

(S.) CLINTON JAMES HUTCHINS,
Libellant.

(S.) THOMPSON, MILVERTON & CATHCART, C.
Proctors for Libellant.

United States of America,
Territory of Hawaii,
City and County of Honolulu,—ss.

Clinton J. Hutchins, the libellant named in the foregoing libel, being first duly sworn, deposes and says, that he is the libellant named in the foregoing libel; that he has read said libel and knows the contents thereof, and that the matters and things therein alleged are true of his own knowledge, except as to such matters as may be therein stated upon information or belief, and that as such matters he believes it to be true.

(S.) CLINTON JAMES HUTCHINS.

Subscribed and sworn to before me this 4th day of April, A. D. 1916.

(S.) BERNICE K. DWIGHT,
Notary Public, First Judicial Circuit, Territory of Hawaii. [17]

Let process issue as prayed for.

Dated at Honolulu, this 4th day of April, A. D. 1916.

(S.) CHAS. F. CLEMONS,
Judge of the United States District Court, in and for the District and Territory of Hawaii. [18]

UNITED STATES MARSHAL'S OFFICE.
MARSHAL'S RETURN.

Received the within libel and order on the 4th day of April, 1916, and return the same as executed upon the American steamship "Great Northern" by exhibiting original libel and order to Chief Officer Wall

of said vessel (he being in charge), and by handing and leaving with him a certified copy of libel and order and by posting public notices of attachment on the foremast and mainmast of said vessel and by leaving Manuel Olsen in charge as custodian, this 4th day of April, 1916.

(S.) J. J. SMIDDY,
U. S. Marshal.

MARSHAL'S RETURN.

Received the within libel and order on the 4th day of April, 1916, and return the same as executed upon F. L. Waldron & Co., Ltd., agents for the American steamship "Great Northern," by exhibiting original libel and order to Fred L. Waldron, President of F. L. Waldron & Co., Ltd., and by handing to and leaving with him a copy of libel and order, this 4th day of April, 1916.

(S.) J. J. SMIDDY,
U. S. Marshal.

[Endorsed]: No. 147. (Title of Court and Cause.) Libel in Rem. Filed Apr. 4, 1916, at 2 o'clock and 15 minutes P. M. (S.) George R. Clark, Clerk. [19]

In the District Court of the United States, in and for the Territory and District of Hawaii.

IN ADMIRALTY—LIBEL IN REM.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," Whereof A. AHMAN, Whose Full Name is Unknown, is and Was Lately Master and Captain, Her Tackle, Apparel, Furniture, Boats and Appurtenances and Against All Persons Having or Claiming to Have Any Interest Therein and Against All Persons Lawfully Intervening in Their Interests Therein,

Libellee.

Claim.

To the Honorable CHARLES F. CLEMONS, Judge of the United States District Court for the District and Territory of Hawaii:

A. Ahman, master of the American steamship "Great Northern," and the lawful bailee thereof, and of her tackle, apparel, furniture, boats, and appurtenances, now lying in the harbor of Honolulu in said territory of Hawaii, now appears before this Honorable Court and claims the said steamship "Great Northern," her tackle, apparel, furniture, machinery, boats, and appurtenances, and states that he is the master of said vessel and the true and lawful bailee thereof and entitled to intervene in the above-

entitled cause on [20] behalf of the steamship "Great Northern," her tackle, apparel, machinery, boats, furniture and appurtenances.

And said claimant prays this Honorable Court to be admitted to defend in said cause on behalf of the owners of said vessel, her tackle, apparel, machinery, boats, furniture, and appurtenances, and that this Honorable Court will be pleased to decree a restitution of said vessel, her tackle, apparel, machinery, boats, furniture, and appurtenances, and otherwise administer right and justice in the premises.

Dated, Honolulu, T. H., April 4, 1916.

(S.) A. AHMAN,

Master of the American Steamship "Great Northern," Her Tackle, Apparel, Machinery, Boats, Furniture and Appurtenances.

United States of America,
Territory of Hawaii.

A. Ahman, being first duly sworn, deposes and says that he is the master of the said steamship "Great Northern," and the lawful bailee thereof, as well as of her tackle, apparel machinery, boats, furniture and appurtenances, and that as such bailee thereof is authorized to make and file the foregoing claim on behalf of the owners thereof; that he has read the said claim and knows the contents thereof and that the matters therein set forth are true; and that the said steamship "Great Northern" is an American vessel owned by the Great Northern Pacific Steamship Company, whose [21] principal place of

business is more than one hundred miles from said Honolulu.

(S.) A. AHMAN.

Subscribed and sworn to before me this 4th day of April, 1916.

(S.) RAY B. RIETOW,
Deputy Clerk, United States District Court, Territory of Hawaii.

[Endorsed]: No. 147. (Title of Court and Cause.) Claim. Filed Apr. 4, 1916, at 3 o'clock and 30 minutes P. M. George R. Clark, Clerk. By (S.) Ray B. Rietow, Deputy Clerk. [22]

Order Continuing Hearing on Libellee's Exceptions to Libel and Order Assigning Case to Judge Vaughan.

From the Minutes of the United States District Court, Vol. 10, page 97, Wednesday, May 31, 1916.

(Title of Court and Cause.)

On this day came Mr. F. M. Milverton, of the firm of Thompson, Milverton & Cathcart, proctors for the above libellant, and also came Mr. L. J. Warren, of the firm of Smith, Warren & Sutton, proctors on behalf of the libellee herein and this cause was called for disposition. Thereupon the libellee having filed their exceptions to the libel, with consent of respective proctors, it was by the Court ordered that this cause be continued for hearing on libellee's exceptions

to libel. Thereafter Judge Clemons ordered that this case be assigned to Judge Vaughan. [23]

Consent of Libellee to Exceptions to Libel Being Overruled Pro Forma and Order Allowing Claimant Ten Days Within Which to Answer.

From the Minutes of the United States District Court, Vol. 10, page 244, Monday, November 13, 1917.

(Title of Court and Cause.)

On this day came Mr. J. W. Cathcart, of the firm of Thompson, Milverton & Cathcart, counsel for the above libellant, and also came Mr. L. J. Warren, of the firm of Smith, Warren & Sutton, counsel for the libellee, herein, and this cause was called for disposition. Thereupon Mr. Warren stated that libellee consented to exceptions to libel being overruled *pro forma* and that claimant be allowed ten days to answer, which was by the Court so ordered. [24]

In the District Court of the United States, in and for the Territory and District of Hawaii.

IN ADMIRALTY—LIBEL IN REM.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," Her Tackle, Apparel, Furniture, Boats and Appurtenances and Against All Persons Having or Claiming to Have Any Interest Therein and Against All Persons Lawfully Intervening in Their Interests Therein,

Libellee,

and

A. AHMAN,

Master and Claimant.

Answer of Claimant.

To the Honorable HORACE W. VAUGHAN, Judge of the United States District Court for the Territory of Hawaii:

Now comes A. Ahman, claimant herein, and the lawful bailee of the American steamship "Great Northern," the libellee in the above-entitled cause, and for answer to the libel of the above-named Clinton J. Hutchins, libellant, herein, alleges as follows:

I.

With respect to the allegations of paragraph 1 of said libel, this claimant has no direct knowledge; but,

basing his answer thereto upon his information and belief, this claimant [25] denies the same.

II.

This claimant admits the allegations of paragraph 2 of said libel; and with respect thereto, further alleges that the said steamship "Great Northern," its owners and officers, did in fact accordingly furnish and provide the libellant with all suitable, requisite, safe and proper appliances, conditions, facilities, and service for a safe passage on said vessel without harm or injury to himself, including a safe and proper place for bathing and safe and proper bath-rooms, equipment and appliances for the bath.

III.

Answering the allegations of paragraph 3 of said libel, this claimant denies that the bath-rooms or any of them on said vessel were negligently constructed or were dangerous or unsuitable for the purposes of bathing; and more especially denies that the rooms or any of them fitted up as and for shower-baths on said vessel were carelessly or negligently constructed or were dangerous or unsuitable for the purpose of taking a shower-bath therein; and further denies that the construction thereof was faulty, improper, unsafe, or dangerous.

And this claimant further denies that said floor bowls were in any respect more slippery to stand upon or in than any porcelain floor or other clean and sanitary bath fixture; and denies that there was no provision by means of rails or otherwise for grasping or holding on in case of slipping.

IV.

Answering the allegations of paragraph 4 of said libel, this claimant has no knowledge except by information from others, but basing his answer thereto upon his information and belief [26] and, while admitting that the libellant, while using or attempting to use the shower-room or compartment on the port side in the bath-room on "C" deck of said vessel, lost his balance and fell and sustained some bruises or injury, the exact nature and extent of which are to this claimant unknown, yet this claimant denies that said accident occurred or injuries were sustained by reason of any negligent, careless or faulty construction of the said bath or shower-room or accommodations, but were in fact the result of failure of the libellant to exercise common care in view of the motion of said vessel while so traveling on the high seas. And claimant further denies that the injuries received by said libellant were so serious as to prevent him from carrying on his regular business.

Claimant further denies that libellant has sustained or is sustaining loss by reason of said accident and denies that he was thereby obliged to remain in Honolulu; and generally denies all allegations of damage made by said libellant in said libel.

V.

Further answering said libel this claimant alleges as follows:

(1) That the steamship "Great Northern," whereon the libellant engaged and had passage from San Francisco to Honolulu, upon the voyage de-

scribed in the libel herein, was at all of the times mentioned in said libel provided with numerous bath-rooms, some fitted with porcelain tubs and others with showers, and all of the latest, modern, and most commodious and practical design and equipment.

(2) That it was at all times optional with the libellant [27] whether or not he would use a shower-bath, or a tub-bath, or any bath at all, on said voyage.

(3) That at all of the times mentioned in said libel the shower-bath referred to in the said libel as that in which or in connection with which the libellant is alleged to have been injured was and is a room approximately thirty inches square, having its walls made of upright marble slabs, open in front and having a pipe overhead and across the front as a curtain rod or support carrying sliding rings for front curtain; that the floor thereof was formed by a porcelain basin of the most approved and modern material and type, measuring approximately twenty-four inches square, practically level having no more slope than was and is necessary for proper drainage, and having sides about six inches above the level of the outside floor. That the said basin or floor was not difficult to stand in or upon, nor was the said bath-room or its equipment in any respect unsafe or dangerous, or carelessly or negligently constructed, or likely in any manner to cause a person using the same to slip or fall.

(4) That the said shower bath-room was and is provided with a metal handle plainly visible and firmly fixed on the back wall at a convenient height

for any person to reach, for instant use if desired; besides which there were a number of other convenient and immediately accessible means of support in and about the said shower bath-room; all of which were plainly visible and conveniently available and useful for the purpose of being taken or used by any person using the said shower bath-room should occasion require or such use thereof seem desirable.

(5) That said floor or basin was made of porcelain which is the usual and approved material for such purpose, to insure [28] cleanliness, and was clean and no more slippery than any other porcelain bath.

(6) That the whole method of construction, the form, the materials used, and the facilities provided and available for holding, and the condition of said bath as to being slippery or otherwise, were all plainly visible to the libellant.

(7) That the said shower-bath room was well lighted by electric light.

(8) That the placing of rubber mats or other floor covering in the basin or floor of the shower bath-rooms was and is not necessary, efficient or of value in rendering the floor any more safe to stand in or upon consistently with proper cleanliness and practical use thereof; and that the said bath-room was proper and safe both in construction and equipment.

(9) That said accident occurred while the said vessel was traveling on the high seas, and if the libellant sustained any injury to himself by reason of having slipped or fallen while using the said bath-

room such injury was occasioned solely and only by the carelessness and negligence of the libellant in his use thereof and in not taking reasonable care or precaution to guard against the same under the conditions and motion of the said vessel at sea; and that the same occurred without any fault or negligence whatsoever on the part of the libellee, or its owners, or its officers or servants on board said vessel.

(10) That said alleged injury was not in any manner caused or contributed to by the style or method of construction or equipment of the said shower-bath room.

(11) That the libellant failed to give proper attention to his alleged injury and neglected the same, and thereby greatly aggravated his injury and increased his pain and suffering [29] therefrom, and prejudiced and prevented the normal healing thereof.

(12) That the libellant was not in fact either seriously or permanently injured or disfigured.

(13) That the libellant has not sustained any injury which will in any way incapacitate him or prevent the free and entire use of his left arm and hand as theretofore.

VI.

This claimant further alleges that said libellant knowingly and voluntarily assumed whatever risk of accident there was in using the said shower bath.

WHEREFORE this claimant prays that this Honorable Court will be pleased to pronounce against the libel aforesaid and to condemn the libellant in costs

and otherwise administer law and justice in the premises.

Dated, Honolulu, T. H., November 18th, 1916.

(S.) A. AHMAN,
Claimant.

United States of America,
Territory of Hawaii,—ss.

A. Ahman, being first duly sworn, says that he is the master of the steamship "Great Northern," and the lawful bailee thereof, as well as of her tackle, apparel, furniture, boats, and appurtenances, and that as such bailee thereof he is authorized to make and file the foregoing answer in behalf of the owner thereof. That he has read the foregoing answer and knows the contents thereof, and that the same is true to the best of his knowledge, information and belief. That the steamship "Great Northern" is an American vessel owned by the Great Northern Pacific Steamship [30] Company, whose place of business is more than one hundred miles from Honolulu.

(S.) A. AHMAN.

Sworn and subscribed to before me this 18th day of November, 1916.

(S.) JAMES M. LAIRD,
Notary Public in and for the City and County of Honolulu, Territory of Hawaii.

SMITH, WARREN & SUTTON,
Proctors for Claimant.

[Endorsed]: No. 147. (Title of Court and Cause.) Answer of Claimant. Filed Nov. 23, 1916, at 1 o'clock and 35 minutes P. M. George R. Clark, Clerk. By (S.) Wm. L. Rosa, Deputy Clerk. [31]

Order Granting Opening of Depositions Extending Time to December 23, 1916, for Hearing on Motion.

From the Minutes of the United States District Court, Vol. 10, page 279, Monday, December 18, 1916.

(Title of Court and Cause.)

On this day came Mr. L. J. Warren, of the firm of Smith, Warren & Sutton, counsel on behalf of the libellee herein, neither the above libellant nor his counsel being present, and this cause was called for hearing on motion to open depositions and set cause for hearing. Thereupon with consent of respective counsel in this cause, it was by the Court ordered that hearing on motion to set cause for hearing be continued to December 23, 1916, at 10 o'clock A. M. Thereafter the Court granted the motion to open the depositions herein and said depositions were opened by the clerk in open court. [32]

Order Entering Name of Geo. A. Davis as Associate Proctor for Libelant, Proceedings at Trial and Order Continuing Cause to February 17, 1917, for Further Trial.

From the Minutes of the United States District Court, Vol. 10, page 355, Friday, February 16, 1917.

(Title of Court and Cause.)

On this day came the above-named libellant in per-

son and with Mr. Geo. A. Davis, and also came Mr. L. J. Warren, of the firm of Smith, Warren & Sutton, proctors for the libellee, and this cause was called for trial. Thereupon Mr. Davis asked that his name be entered as associated with the firm of Thompson, Milverton & Cathcart, proctors for the said libellant which was by the Court so ordered. Thereafter, Clinton J. Hutchins, said libellant, was called and sworn and gave testimony on his own behalf. Mr. Davis then presented an amendment to the Libel herein, which was by the Court allowed, and the time for adjournment having arrived, it was by the Court ordered that this cause be continued to February 17, 1917, at 9 o'clock A. M., for further trial. [33]

Amendment to Libel.

4a. AND THE SAID LIBELLANT further alleges and charges that it became and was the bounden duty of the said steamship "Great Northern," its owners and the master thereof to employ and keep employed and have on board of said steamship on said voyage hereinbefore set out in this libel a skilful and competent physician and surgeon and it became and was the bounden duty of said steamship, its owners and the master thereof under the marine contract so entered into between this libellant and the said steamship, its owners and master thereof, to employ and keep employed and have on board of said steamship a competent and skilful physician and surgeon to attend to this libellant and to exercise medical care and surgical skill in healing and endeavoring to heal and cure him of the injuries so sustained

by him as a foresaid on board of said steamship on the said 18th day of February, A. D. 1916, and at all other times during said voyage; and it became and was the bounden duty of the said steamship, its owners and the master thereof to exercise the highest degree of care and to endeavor to and use skill, care and render the best possible surgical and medical attention towards this libellant after he sustained the injuries as aforesaid in order to heal and cure him of his injuries and to continue to exercise the highest degree of care and skill towards this libellant after he received the said injuries during the rest of the voyage and until the arrival of said steamship "Great Northern in the port of Honolulu; yet the said steamship, the master and its owners thereof not regarding their duty in that behalf and in violation of the marine contract so entered into as aforesaid [34] and in violation of the duty and obligations arising under said marine contract, the said steamship, the master and owners thereof did not employ and keep employed nor furnish this libellant with a competent physician but had an unskilful, incompetent physician on board said steamship who failed and neglected to give proper care and exercise proper medical skill and attention towards this libellant, which the said steamship, its owners and the master thereof, well knew, and neither the master nor the officers of said steamship nor said incompetent physician exercised proper care, skill and attention towards this libellant at any time during said voyage, and after he had received the injuries so occasioned as aforesaid, the said incompetent physician so employed as

aforesaid treated the injuries sustained by this libellant unskilfully, negligently and improperly, and by reason of the incompetency of the said physician and surgeon so employed as aforesaid, the libellant suffered excruciating pain and torture after he sustained the said injuries as aforesaid and during the remainder of said voyage on said steamship by reason of the failure and neglect of the master and officers of said steamship towards him and because of the incompetency of said physician and surgeon so employed as aforesaid, the said physician and surgeon so employed as aforesaid did not make a proper examination of the broken shoulder joint and injuries so sustained by this libellant, nor did he use proper care and skill in attending to the same but treated it as a bruise and was guilty of gross negligence and the said steamship, the master and owners thereof in violation of said marine contract so entered into as aforesaid between this libellant, the said steamship and the owners and master thereof employed and kept employed said wholly competent physician during all of said voyage with full [35] knowledge that said physician and surgeon was wholly incompetent and unskilful and said steamship, its owners and the master thereof, failed and neglected to render such proper medical care and skill to this libellant as required by the terms of said marine contract so entered into as aforesaid, and failed and neglected to call in the assistance and advice or other physicians and surgeons who were passengers on board of said steamship during said voy-

age, and utterly failed and neglected to exercise the highest or any degree of care towards this libellant.

[Endorsed]: No. 147. (Title of Court and Cause.) Amendment to Libel by Adding Paragraph 4a. Filed Feb. 16, 1917, at 10 o'clock and 20 minutes A. M. (Sgd.) George R. Clark, Clerk. [36]

Proceedings at Trial, etc., and Order Continuing Cause to February 19, 1917, for Further Trial.

From the Minutes of the United States District Court, Vol. 10, page 356, Saturday, February 17, 1917.

(Title of Court and Cause.)

On this day came the above-named libellant in person and with Mr. Geo. A. Davis, one of the proctors for said libellant, and also came Mr. L. J. Warren, of the firm of Smith, Warren & Sutton, proctors for the libellee herein, and this cause was called for further trial. Thereupon with consent of respective proctors the libellant herein was withdrawn from the witness-stand and Dr. Clifford B. Wood was called and sworn and gave testimony on behalf of said libellant, Libellant's Exhibit "A" was admitted in evidence and ordered filed. Thereafter the libellant was called and gave further testimony on his own behalf. Dr. W. C. Hobdy was called and sworn and gave testimony on behalf of the libellant, and at the conclusion of which Mr. Davis moved to have the depositions of Francis G. Lefebre et al. opened, which was

by the Court so ordered, whereupon said depositions having been opened, respective proctors read same. Thereafter Dr. George F. Straub was called and sworn and gave testimony on behalf of the libellant, and Libellant's Exhibits "B" and "C" were admitted in evidence and ordered filed, and the time for adjournment having arrived, it was by the Court ordered that this cause be continued to February 19, 1917, at 9 o'clock A. M., for further trial. [37]

Proceedings at Trial, Motion to Strike Certain Testimony and Order Continuing Cause to February 20, 1917, for Further Trial.

From the Minutes of the United States District Court, Vol. 10, page 357, Monday, February 19, 1917.

(Title of Court and Cause.)

On this day came the above-named libellant in person and with Mr. Geo. A. Davis, one of the proctors for said libellant, and also came Mr. L. J. Warren, of the firm of Smith, Warren & Sutton, proctors for the libellee herein, and this cause was called for further trial. Thereupon proctors continued with the reading of depositions, whereupon Mr. Davis suggested that the Court read the depositions on file when case submitted, which was satisfactory to Mr. Warren. Thereafter Herbert E. Wescott was called and sworn and gave testimony on behalf of the libellant. With consent of respective proctors, William Paul Metzler was called and sworn for libellee and

Libellant's Exhibit "D" was admitted in evidence and ordered filed. John S. Ford and John George Harrington were called and sworn for libellant, at the conclusion of which libellant closed, whereupon Mr. Warren moved to strike from the record the testimony adduced by the libellant in this case going to the effect that the company had hired an inefficient doctor, which was by the Court taken under advisement. J. B. Morris was called and sworn and gave testimony on behalf of the libellee. Mr. Warren then moved that the depositions read be admitted in evidence, which was by the Court so ordered, and the time for adjournment having arrived, it was by the Court ordered that this cause be continued to February 20, 1917, at 9 o'clock A. M., for further trial. [38]

Proceedings at Trial and Order Continuing Cause to February 21, 1917, for Further Trial.

From the Minutes of the United States District Court, Vol. 10, page 358, Tuesday, February 20, 1917.

(Title of Court and Cause.)

On this day came the above-named libellant in person and with Geo. A. Davis, one of the proctors, and also came Mr. L. J. Warren, of the firm of Smith, Warren & Sutton, and this cause was called for further trial. Thereupon Herbert E. Wescott was recalled and gave further testimony on behalf of the libellant, at the conclusion of which, proctors for the

libellant closed. Thereafter Capt. A. Ahman was called and sworn and gave testimony on behalf of the libellee, and it was by the Court ordered that this cause be continued to February 21, 1917, at 2 o'clock P. M., for further trial. [39]

Proceedings at Trial, Order Allowing Libellee Until March 17, 1917, to File Further Depositions and Order Continuing Cause to February 26, 1917, for Further Trial.

From the Minutes of the United States District Court, Vol. 10, page 360a, Wednesday, February 21, 1917.

(Title of Court and Cause.)

On this day came the above libellant in person and with Mr. Geo. A. Davis, one of his proctors, and also came Mr. L. J. Warren, of the firm of Smith, Warren & Sutton, proctors for the libellee herein, and this cause was called for further trial. Thereupon Joseph Gould was called and sworn and gave testimony on behalf of the libellee, J. B. Morris was recalled and gave further testimony on behalf of the said libellee, Thomas S. Mills was called and sworn and gave testimony on behalf of the libellee and Libellee's Exhibit 1 was admitted in evidence and ordered filed. Thereafter with consent of respective proctors, libellee was given until March 17, 1917, to file further depositions herein, and this cause was continued to February 26, 1917, at 10 o'clock A. M. for further trial. [40]

Order Directing Issuance of Commission to Take the Deposition of C. W. Wiley, Witness for Libellee, and Continuance to February 26, 1917, for Further Trial.

From the Minutes of the United States District Court, Vol. 10, page 363, Saturday, February 24, 1917.

(Title of Court and Cause.)

On this day came Mr. Geo. Davis, one of the proctors on behalf of the libellant, and also came Mr. L. J. Warren, of the firm of Smith, Warren & Sutton, proctors for the libellee herein, and this cause was called for disposition. Thereupon the direct and cross-interrogatories to be propounded to C. W. Wiley, witness for the libellee, were presented, and upon being approved, the Court ordered a commission to issue to take the deposition of the said C. W. Wiley. Thereafter it was further ordered by the Court that this cause be continued to February 26, 1917, at 2 o'clock P. M., for further trial. [41]

Filing Amendment to Answer, Proceedings at Trial and Continuance to February 27, 1917, for Further Trial.

From the Minutes of the United States District Court, Vol. 10, page 365, Monday, February 26, 1917.

(Title of Court and Cause.)

On this day came the above libellant in person and

with one of this proctors, Mr. Geo. A. Davis, and also came Mr. L. J. Warren, of the firm of Smith, Warren & Sutton, and this cause was called for further trial. Thereupon Mr. Warren having presented an amendment to the answer heretofore filed and said amendment being approved and ordered filed by the Court, Robert Booth and Frederick Lamb were called and sworn and gave testimony on behalf of the libellee herein. Thereafter with consent of Mr. Warren, Robert B. Hackett was called and sworn and gave testimony on behalf of the libellant, at the conclusion of which, upon motion by Mr. Warren with consent of Mr. Davis, it was by the Court ordered that this cause be continued to February 27, 1917, at 10 o'clock A. M., for further trial. [42]

In the District Court of the United States, in and for the District and Territory of Hawaii.

IN ADMIRALTY—LIBEL IN REM.

No. 147.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," Her Tackle, etc.,

Libellee,

and

A. AHMAN,

Master and Claimant.

Claimant's Answer to Paragraph 4a Filed February 16th, 1917, as an Amendment to the Libel.

To the Honorable HORACE W. VAUGHAN, Judge of the United States District Court for the Territory of Hawaii:

Now comes A. Ahman, claimant herein, and for answer to paragraph 4a filed by the libellant herein on the 16th day of February, 1917, as an amendment to the libel in this cause, alleges as follows:

I.

This claimant denies that the surgeon on board the steamship "Great Northern," upon the voyage described in said libel and in said paragraph 4a thereof, was incompetent, unskillful or negligent in his treatment and care of the libellant; and denies that the said physician when engaged by the owners of said vessel was known to said owners or to the master thereof as being unskillful or incompetent; and denies that then or thereafter at any time [43] up to the time of the injury of libellant complained of the said owners or master knew of any incompetency of the said physician; and denies that the said owners and or master employed or kept the said physician employed, knowing or believing him to be incompetent or unskillful.

WHEREFORE, this claimant renews his prayer set forth in his answer dated November 18th, 1916,

and filed herein November 23d, 1916, in this cause.

(Sgd.) A. AHMAN,
Claimant.

By (Sgd.) SMITH, WARREN & SUTTON,
His Proctors.

[Endorsed]: No. 147. (Title of Court and Cause.) Claimant's Answer to Amendment. Filed February 26, 1917. A. E. Harris, Clerk. By (Sgd.) Wm. L. Rosa, Deputy Clerk. **[44]**

Proceedings at Trial and Continuance to March 1, 1917, for Further Trial.

From the Minutes of the United States District Court, Vol. 10, page 367, Tuesday, February 27, 1917.

(Title of Court and Cause.)

On this day came the above libellant in person and with one of his proctors, Mr. Geo. A. Davis, and also came Mr. L. J. Warren, of the firm of Smith, Warren & Sutton, proctors for the libellee, and this cause was called for further trial. Thereupon Robert J. McAdory was called and sworn and gave testimony on behalf of the libelee, and Libellee's Exhibits 2, 3, and 4 were admitted in evidence and ordered filed, and with consent of respective proctors, it was by the Court ordered that this cause be continued to March 1, 1917, at 10 o'clock A. M., for further trial. **[45]**

Proceedings at Trial and Continuance to March 6, 1917, for Argument.

From the Minutes of the United States District Court, Vol. 10, page 369, Thursday, March 1, 1917.

(Title of Court and Cause.)

On this day came the libellant in person and with one of his proctors, Mr. Geo. A. Davis, and also came Mr. L. J. Warren, of the firm of Smith, Warren & Whitney, proctors for the libellee herein, and this cause was called for further trial. Thereupon John Waterhouse and J. W. Waldron were called and sworn and gave testimony on behalf of the libellee, at the conclusion of which the libellee having closed, Dr. Wood was recalled on rebuttal and gave further testimony on behalf of the libellant. The libellant herein was recalled and gave further testimony on his own behalf, and both sides having closed, it was by the Court ordered that this cause be continued to March 6, 1917, at 2 o'clock P. M. for argument. **[46]**

Libelant's Exhibit "A"—X-ray Plate, Dr. G. F. Straub.

[Endorsed]: No. 147. In the United States District Court for the Territory of Hawaii. Clinton James Hutchins, Libelant, vs. The American Steamship "Great Northern," etc., Libelee. Libelant's Exhibit "A"—X-ray plates, Dr. G. F. Straub. Filed February 17, 1917, at —— o'clock and —— minutes —— M. George R. Clark, Clerk. ————, Deputy Clerk. [47]

Libelant's Exhibit "B"—X-ray Plate, Dr. W. C. Hobdy.

[Endorsed]: No. 147. In the United States District Court for the Territory of Hawaii. Clinton James Hutchins, Libelant, vs. The American Steamship "Great Northern," etc., Libelee. Libelant's Exhibit "B"—X-ray plate, Dr. W. C. Hobdy. Filed February 17, 1917, at —— o'clock and —— minutes —— M. George R. Clark, Clerk. ————, Deputy Clerk. [48]

Libelant's Exhibit "C"—X-ray Plate, Dr. W. C. Hobdy.

[Endorsed]: No. 147. In the United States District Court for the Territory of Hawaii. Clinton James Hutchins, Libelant, vs. The American Steamship "Great Northern," etc., Libelee. Libelant's Exhibit "C"—X-ray plate, Dr. W. C. Hobdy. Filed February 17, 1917, at —— o'clock and —— minutes —— M. George R. Clark, Clerk. ————, Deputy Clerk. [49]

Libelant's Exhibit "D"—Card of W. P. Metzler.

Great Northern Pacific Steamship Co.
Spokane, Portland & Seattle.

W. P. METZLER.

Pier #7,
Frisco, Cal.

Special Agent.

[On reverse side:] Please call at my office as soon as possible.

W. P. METZLER.

[Endorsed]: No. 147. In the United States District Court for the Territory of Hawaii. Clinton James Hutchins, Libellant, v. The American Steamship "Great Northern," etc., Libellee. Libellant's Exhibit "D" (card of W. P. Metzler). Filed Feby. 19, 1917, at —— o'clock and —— minutes ——M. George R. Clark, Clerk. By Wm. L. Rosa, Deputy Clerk. **[50]**

Libelee's Exhibit No. 1—Letter, Voucher and Requisition.

[Endorsed]: In the District Court of the United States, in and for the District and Territory of Hawaii. C. J. Hutchins, Libellant, vs. The American S. S. "Great Northern," Libellee. Libellee's Exhibit 1. Filed Feby. 21, 1917, at —— o'clock and —— minutes ——M. A. E. Harris, Clerk. By Wm. L. Rosa, Deputy Clerk. **[51]**

San Francisco, Jan. 4th, 1917.

Mr. T. S. Mills,

Chief Steward "Great Northern."

Dear Sir:

Attached please find original invoice of Muir & Symon of Jan. 25th, 1916, for $427.82 and original requisition S—27 S. S. "Great Northern," which you will please deliver in person to Messrs. Smith, Warren and Sutton, our attorneys at Honolulu, and ask them to kindly return same to this office when they have finished with same.

Yours truly,

J. B. MORRIS,

B.

Marine Superintendent. [51a]

Telephone Kearny 2113

C. W. W. 2387

Anchors & Chains
Bronze Bushings
Metalline
Boat Davits
Chains all sizes B. B.
Black & Galvanized
Derricks
Derrick Irons

MUIR & SYMON

Incorporated

IRON WORKS

Hooks
Mooring Bitts
Shackles
Sheaves
Steel Buoys
Steel Blocks
Stevedoring Trucks
Swivels

Iron Ship Repairers, Engineers and General Blacksmiths Steel and Wood Spar Makers

1011–1017 Battery Street

San Francisco, Cal., Jan. 25, 1916.

Sold to S/S "Great Northern" and Owners.

Our Order No. 86.

Your Order No. Req. #S. 27. H 541

Terms Net Cash

Steward's Dep't.

Range Guard cut in two pieces.

Guard around top of Broilers.
Water Pipe & Faucet in Bakers Shop.
Overhauling Proof Box.
Overhauling Bake Shop Drum & Cleaning Flues.
Repairing Ice Cream Scoop.
Repairing Ice Cream Containers. (Retinning).
Retinning 3—Sauce Pans.
Making I—Movable Table for Bake Shop.
Overhauling Hinges on Door of Bakers Chill Box.
Overhauling Hinge on Door of Butcher Shop.
Overhauling Hinges on Doors of 1st Cabin Pantry.
Repairing Scupper Drain in Refrigerator & Butcher Shop.
Fastening & Renewing 3—Tiles in Kitchen Floor.
Repairing Bench in 1st. Cabin Pantry.
" Table in 2d. " "
Fixing Handle of Faucet on Milk Container, 1st. Cabin Pantry.
Knob on 1st. Cabin Pantry Steam Table.
6—new Guards for Range.
5—Guards for Center Table in Main Kitchen.
1—Table for 1st. Cabin Pantry.
1—new Foot Board.
Strap up Sink in Main Kitchen.
Repairing 24—Deck Chairs.
1—Weather Strip on Pantry Table, Stbd. side.
Repairing 1—Dining Room Chair.
" 1—Chair from Suites.
" 1—Veranda Chair.
" 2—Cane Bottom Chairs,in Smoking Room.
Repairing Overhead Leak in Room 168.
Fastening Backs of all Settees.

Furnishing & Fitting Hooks on all Bath Room Doors in Suites.

Repairing Hot & Cold Water Connections in Showers.

Grab Bars in all Shower Baths.

Overhauling & Replacing Packing on Silver Machine.

Steam to Bakers Oven.

Sharpen Knives, etc.

Asbestos Washers for Chandeliers for D. R.

Asbestos Rings & Stops on Suites & Sofa Lights.

[In pencil:]

O.K.—T. S. MILLS, Chf. Std.

O.K.—W. P. CUYLER.

Forwarded Sheet #2.

Telephone Kearny 2113

Anchors & Chains
Bronze Bushings
Metalline
Boat Davits
Chains all sizes B. B.
Black & Galvanized
Derricks
Derrick Irons

MUIR & SYMON

Incorporated

IRON WORKS

Hooks
Mooring Bitts
Shackles
Sheaves
Steel Buoys
Steel Blocks
Stevedoring Trucks
Swivels

Iron Ship Repairers, Engineers and General Blacksmiths, Steel and Wood Spar Makers

1011–1017 Battery Street

San Francisco, Cal., Jan. 25, 1916.

Sold to S/S "Great Northern" and Owners.

Our Order No. 86.

Your Order No. Req. #S. 27.

Terms Net Cash

Steward's Dep't.

– 2 –

Brot. Forw'd

To Furnishing 3–Wire Handle Stove Knobs .35

"	"	50–¼ x ¾ Stove Bolts.....	.18
"	"	25–¼ x 1" " "	.15
"	"	6–⅜ x ¾" Bolts	.20
"	"	1–Sk. of Clay	1.05
"	"	6–pcs. 6 x 6 Red Tile	.72
"	"	3–30 x 15 x 3 Flanged Ed. Fire Tile	4.80
To Repairing		Chairs & Tables.....	29.90
"	"	2–Cane Chairs	3.60
To Furnishing		1–pc. of Ash	1.00
"	"	1– " 2 x 12 Pine).....	
"	"	1– " 1 x 6 ").....	
To Sawing & Planing same		).....	4.13
To Furnishing		39–ft. of Ash 1".....	5.86
"	"	15– " " " 1½"	1.80
"	"	58– " " Spruce 1"	3.14
To Sawing Spruce as ordered.....			.60
To Furnishing		1–pc. of Belt Leather 7" wide	3.03
"	"	1–Gro. ⅞ x 8 F. H. Galv. Screws	.50
"	"	1⅓–Doz. 3 x 20 F. H. Brass Screws	.95
"	"	1–Handle for Urn Cock	.65
"	"	2–Doz. 1½" Brass Screws..	.40
"	"	4– " 2" " " ...	1.00
"	"	3–lbs. Galv. Nails.....	.35
"	"	White Lead	.40
"	"	12–Pr. 4" Galv. Port Hinges.	3.25
"	"	1–pc. ½" White Sheet Felt, Cut	.30
"	"	1–pc. Tire Felt	.36

"	"	1–Brass Casting for Bottle Holder, Machine	1.77
"	"	12–Nickle Plated Hat & Coat Hooks	5.04
"	"	10–Nickle Plated Pulls	7.10
"	"	1–Ice Chest Catch	.55
"	"	½–doz. 3" Bronze Cabin Door Hooks	5.28
"	"	½–doz. 4" Bronze Cabin Door Hooks	5.52
"	"	1–lb. 3D Galv. Wire Fin. Nails	.12
"	"	2–12" N. P. on Brass Hooks & Eyes	.60
"	"	1½ Doz. ⅝ Brass Shoulder Hooks	.18
		Forwarded.....	$94.83

O.K.—T. S. Mills, Chf. Std.

O.K.—W. P. Cuyler.

Telephone Kearny 2113

Anchors & Chains
Bronze Bushings
Metalline "
Boat Davits
Chains all sizes B. B.
Black & Galvanized
Derricks
Derrick Irons

MUIR & SYMON

Incorporated

IRON WORKS

Hooks
Mooring Bitts
Shackles
Sheaves
Steel Buoys
Steel Blocks
Stevedoring Trucks
Swivels

Iron Ship Repairers, Engineers and General Blacksmiths, Steel and Wood Spar Makers

1011–1017 Battery Street

San Francisco, Cal., Jan. 25, 1916.

Sold to S/S "Great Northern" and Owners.

Our Order No. 86.

Your Order No. Req. S. 27.

Terms Net Cash

Steward's Dep't.

– 3 –

		Brot. Forw'd.....	94.83
To Furnishing		1–½ x ¼ x ½ blk plain Tees	.09
"	"	4–¼" " " Ells	.08
"	"	1–½" Jeff Union.....	.24
"	"	2–¼" " "	.29
"	"	2 ¼" x blk Nipples.....	.05
"	"	2 – ¼" x 3 " "	.05
"	"	2 – ¼" Globe Valves.....	1.43
"	"	35'– 1 " of ¼" blk Pipe.....	1.08
"	"	30 – ft. ¾" Gal. Pipe.....	1.98
"	"	1 – ¾" Tee "	.15
"	"	1 – ¾" 45° "	.12
"	"	1 – ¾" Ell "	.05
"	"	1 – ¾" Valve "	.10
"	"	1 – ¾" Union "	.36
"	"	Red Putty.....	.20

"	"	6 – ¾" Galv. bd. Tees..... .52
"	"	1 – ¾" Hgh. Comp. Hose Bibb. sot..... 85
"	"	2 – Doz. Copper Rivets.... .18
"	"	1 – Gro. Hex. Brass Nuts 6/32..... 97
"	"	25 – Oval Hd. N. P. Screws 8/32x½"..... 23
"	"	25 – Oval Hd N. P. Wood Screws #10x1"..... .18
"	"	16 – R. H. Brass Wood Screws #1x3½"..... ... 1.32
"	"	Brass Washers..... .60
"	"	50 – R. H. Brass Screws #12x3"... 3.50
"	"	8 – 5/16x24" Dowel Sticks O. P.
"	"	2 – 7/16x4' Dowel Sticks O. P..... 25
"	"	½ – pt. Le Pages Glue..... .30
"	"	24–Plates, Butler Silver with ⅜ brass tube hole in centre. 7.20
"	"	23 – ⅜ Spindles..... 5.52
"	"	46 – ⅛" Lock Nuts..... .84
"	"	50 – Sash Rods..... 6.00
To Sharpening		32 Knives, 7 Cleavers & 5 Saws..... 5.35
To Retinning		3 – Sauce Pans..... 3.75
"	"	1 – large Ice Cream Container... 1.73

To Furnishing Brass					3.28
" "	Copper	12 #	@	.50 ...	6.00
" "	Iron	229½#	@	.04½..	10.32

Forwarded....$159.99

[In pencil:]
O. K. T. S. Mills, Chf. Std.
O. K. W. P. Cuyler.

Telephone Kearny 2113

Anchors & Chains
Bronze Bushings
Metalline "
Boat Davits
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Iron Ship Repairers, Engineers and General Blacksmiths, Steel and Wood Spar Makers
1011–1017 Battery Street
San Francisco, Cal., Jan. 25, 1916.

Sold to S/S. "Great Northern" and Owners.
Our Order No. 86.
Your Order No. Req. S. 27, H 541 Terms Net Cash.
Stewards Dep't.

—4—

Brot Forw'd.**				159.99
Forge, Blacksmith & Helper	½ Hr.	@	15.00	.94
Machine & Machinist	4¼ "	@	8.00	4.25
Fitter & Plumber	106½ "	@	6.50	86.52
Helper	94¾ "	@	4.00	47.12
Joiner	21½ Days	@	6.00	129.00

$427.82

[Stamped]: Calculations correct. ER Comp Opr.
O. K.—T. S. MILLS, Chf. Std.
O. K.—W. P. CUYLER.

Prices Correct E Ext. Verified W. F. O. B. San Francisco. S. F. Clark, Purchasing Agent. W. E. Q. C. Material received in good order —— 19—. Charged to ——. Taken to % —— Month.

C. W. WILEY,
Superintendent or Storekeeper.

This is to certify that this bill has not been previously paid. Date 3–21–16. BS, Voucher Clerk.

Vouchered.
Feb. 21, 1916.

PURCHASE REQUISITION.

To Purchasing Agent L. C. G. Requisition No. S #27

The following supplies are needed by Great Northern Pacific S. S. Coy. Please send to Repairs at San Francisco.

DESCRIPTION OF ARTICLES.

Thin wire mesh netting around globes head of beds in suites.
Do around clusters in Dining room.
Grab Bars in all shower baths.
Packing Replaced on Silver Machine & Overhaul
New Tables on Veranda.

T. S. MILLS.
[Sign Here]

Approved:
" C. W. WILEY, Marine Supt.
" BLAIR, Port Steward.
" C. O. JONES, General Manager.
Chief Steward.
[Title]
Dated Jan. 20, 1916.
Approved: L. C. GILMORE,
President.

H 541.
2/23.

PURCHASE REQUISITION.

To Purchasing Agent, Requisition No. S #27.

The following supplies are needed by Great Northern Pacific S. S. Coy.

Please send to Stewards Dept. S. S. Great Northern at San Francisco.

1st Cabin Kitchen—Repairs.

Guard around top of Broilers.
Range Guard to be cut in two pieces.
Water pipe & Faucet in Bakers Shop.
Garbage shute stop leaking.
Proof Box Overhauling.
Bake Shop Drum Overhauling & Flues cleaning.
Ice Cream scoop repair.
Ice Cream container retinning.
3 Sauce Pans retinning.
1 New Movable Table for Bake shop.
Hinges on doors of Bakers chill Box overhauling.

Hinge on Door of Butcher shop overhauling.

Hinges on Doors of 1st cabin pantry overhauling.

Scupper drain in refrigerator and Butcher shop repairing.

3 Tiles Kitchen floor fastening and renewing.

Strap up bench in 1st Cabin Pantry repairing.

Strap up Table in 2nd cabin pantry repairing.

Fix handle of faucet on milk container 1st cab pantry.

Knob on 1st cabin pantry steam table.

Need new 6 Guards for range.

Guards for centre table in main kitchen.

One Table for 1st cabin pantry.

one footboard in front of Strap up sink main Kitchen.

24 Deck chairs to repair.

1 Weather strip on pantry table Starb. side.

1 Dining room chair to repair.

1 chair from suites "

1 Veranda Chair "

2 Can Bottom chairs smoking room.

Overhead leak in room 168 (very bad).

Backs of all Setees fall down.

Hooks on all Bathroom doors in suites.
Hot & Cold water connection in showers Bad order.

T. S. MILLS,
[Sign Here]
Chief Steward.
[Title]

Approved: C. W. WILEY,
Marine Superintendent.
" BLAIR,
Port Steward.
" C. O. JONES,
General Manager.

Dated Jan. 20, '16.

Approved: L. C. GILMORE,
President.

Libelee's Exhibit No. 2—Certificate of Recommendation to R. J. McAdory from W. H. Avery, Assistant General Manager, Oriental Steamship Company.

In the United States District Court for the Territory of Hawaii. C. J. Hutchins, Libellant, vs. "Great Northern," Libellee. Libellee's Exhibit 2. Filed Feby. 27, 1917. —— o'clock and —— minutes —— M. A. E. Harris, Clerk. Wm. L. Rosa, Deputy Clerk. [52]

Office of
William H. Avery,
Assistant General Manager.

Merchants National Bank Bldg.
625 Market St.

Cable Address "Toyokisen."

TOYO KISEN KAISHA.

(Oriental Steamship Co.)

IMPERIAL JAPANESE AND
U. S. MAIL LINE.

Per S. S. ————————

In Your Reply Please Refer to No. T–1

San Francisco, November 11th, 1914.

TO WHOM IT MAY CONCERN:—

This is to the effect that Dr. R. J. McAdory was engaged in this Company's service as Ship's Surgeon from September, 1913, to May, 1914, and during the time he served in that capacity his services were found to be eminently satisfactory and we would have no hesitancy in recommending him to anyone desiring the service of a gentleman of his capability.

W. H. AVERY.

Libelee's Exhibit No. 3—Certificate of Recommendation to Dr. R. J. McAdory from Philip Mills Jones, Secretary of Medical Society of the State of California.

In the United States District Court, Territory of Hawaii. C. J. Hutchins, Libellant, vs. "Great Northern," Libellee. Libellee's Exhibit 2. Filed Feby. 27, 1917. —— o'clock and —— minutes —— M. A. E. Harris, Clerk. Wm. L. Rosa, Deputy Clerk. [53],

OFFICE OF THE

MEDICAL SOCIETY OF THE STATE OF CALIFORNIA,

SAN FRANCISCO, CALIFORNIA.

Publications
California State Journal of Medicine—Monthly
Official Register and Directory—Annually

BUTLER BUILDING,

135 STOCKTON ST., SAN FRANCISCO, CAL.

TELEPHONE DOUGLAS 2537.

Nov. 12, 1914.

TO WHOM IT MAY CONCERN:

This is to convey to you the information that Dr. R. J. McAdory is a regularly graduated physician, licensed to practice in this State, and for some time has been known favorably to this office.

Respectfully,

PHILIP MILLS JONES,
Secretary.

P. M. J.—P. M.

Libelee's Exhibit No. 4—Certificate of Recommendation to Dr. R. J. McAdory from E. Anderson, Master of Steamship "Honolulan."

In the United States District Court, Territory of Hawaii. C. J. Hutchins, Libellant, vs. "Great Northern," Libellee. Libellee's Exhibit 4. Filed Feby. 21, 1917. —— o'clock and —— minutes —— M. A. E. Harris, Clerk. By Wm. L. Rosa, Deputy Clerk. [54]

S. S. HONOLULAN,

AMERICAN-HAWAIIAN STEAMSHIP COMPANY.

Cable Address
"Amhawaii"
New York, San Francisco
Honolulu

Aug. 25th, 1915.

To Whom It May Concern:

This is to certify that Dr. R. J. McAdory was Surgeon on the S. S. Honolulan of the American Hawaiian S. S. Co. plying between San Francisco and New York, via The Panama Canal since November, 1914, to the present date.

His services were entirely satisfactory and were only terminated when the Company discontinued its passenger business.

E. ANDERSON,
Master.

Filed Oct. 4, 1917, at 3 o'clock —— min. ——P. M. A. E. Harris, Clerk. By Wm. L. Rosa, Deputy Clerk. [55]

In the United States District Court, in and for the Territory of Hawaii.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," etc.,

Libellants.

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In the United States District Court, in and for the Territory of Hawaii.

Before the Honorable HORACE W. VAUGHAN, Judge of said Court.

AD. 147—IN REM.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," etc.,

Libellee.

Transcript of Testimony.

APPEARANCES:

Messrs. THOMPSON, MILVERTON & CATHCART, and by GEORGE A. DAVIS, Esq., for Libellant.

Messrs. SMITH, WARREN & SUTTON, by L. J. WARREN, Esq., for Libellees.

Friday, February 16, 1917.
10:00 A. M.

Mr. DAVIS.—Your Honor, I wish to have my name entered on the record as associate counsel with Thompson, Milverton and Cathcart in this case. We are ready to proceed.

Mr. WARREN.—I wish to refer to the situation which has existed **[56]** heretofore, and the reason for setting the case a little in advance of the arrival

of the "Great Northern," so as to permit this case to be put on so that the defendant's case might be tried while the vessel is in port.

Mr. DAVIS.—All right. Is your Honor familiar with the libel in this case or do you want it read?

The COURT.—No, I am not familiar with it.

Mr. DAVIS. There has been a lot of testimony taken by depositions under stipulation, there is no trouble with that.

The COURT.—All right. There is no necessity for reading the libel through. Just state the substance of the libel.

Mr. Davis reads the substance of the libel to the Court.

Mr. DAVIS.—Before proceeding to trial, I wish to move to amend the libel by adding a paragraph, which I now serve counsel with a copy of, paragraph marked No. 4–A (reads), and I therefore move to have this article added to the libel.

Mr. WARREN.—If your Honor please, this motion does come as a surprise, a great surprise. It contains allegations of entirely new matter not touched upon in the original libel, namely, the employment by the company of an incompetent physician and surgeon, an unskilled man, with knowledge on the part of the company of his incompetency, and I submit that the introduction of the new issue in the case at this time, while your Honor may allow it, it should be on the terms namely that depositions should be allowed to issue from this Court to take the testimony of a witness who is residing at San Francisco whose testimony is absolutely necessary

to meet that issue of which we have heretofore [57] had no notice whatever.

The COURT.—The original libel does not say anything about the incompetency of the physician.

Mr. WARREN.—It alleges incompetency but it makes no reference whatever of the employment by the company with knowledge of incompetency. The distinction is this, it is perfectly easy for any plaintiff to make sweeping assertions of incompetency of a doctor, but that imposes no liability on the steamship company unless that steamship company had knowledge of that incompetency and so employed him. There has been nothing of that issue here and depositions have been taken and that ground would have been thoroughly covered had it been an issue. I do not object to that if terms are allowed enabling us to secure the necessary testimony of the only witnesses who know and who reside in San Francisco and Portland.

The COURT.—I don't doubt that you are allowed to amend the libel, and under your allegations in the reply I realize also that the strict technical rules do not govern in these admiralty trials. Even under the original bill your proof in this matter would have been admitted and counsel be given an opportunity to rebut it, and even after the close of the proof—counsel simply wants to be sure that he will be given an opportunity to meet it. It occurs to me that it might cause delay because he wanted to prove that the ship had no knowledge of this incompetency even if you prove incompetency.

Mr. DAVIS.—I haven't got to prove that it was

called to their attention— [58]

The COURT.—All right, Mr. Davis, there is no need to decide these matters before we get to them. I will allow you to amend your libel and I state now that I will allow this amendment you offer and at the same time I will state that counsel will be given an opportunity to meet this issue. Of course, I expect you to use despatch in getting this testimony.

Mr. WARREN.—I want it clear on the record that it will be necessary to take depositions on that issue.

The COURT.—All right. I understand there is no dispute but that the claimant was a passenger on board the steamer and what the marine contract was?

Mr. WARREN.—Yes, that is all right, your Honor. In view of the additional amendment we expect to meet the issue of incompetency of the physician and knowledge of any incompetency on the part of the ship.

The COURT.—This amendment you made, does it allege negligence in the employment of the physician and that they have knowledge of it?

Mr. DAVIS.—Yes, your Honor. Now, as to a reasonable time for proof, your Honor, I will take up that question with your Honor as to counsel being allowed a reasonable time to meet that testimony, but he has to meet it on the trial. I don't think he has any right to depositions, he must have his witnesses here, the time for depositions is past. This is the hearing, now let him bring them here. He is the libellee in this suit and I want to fight that out when the proper time comes.

(Testimony of Clinton J. Hutchins.)

The COURT.—I know in a general way that the management of this ship is in San Francisco *of* Philadelphia— [59]

Mr. DAVIS.—Your Honor, they have a general agent representing them here, Waldron & Company. And I ask that counsel be directed to proceed with despatch in the trial of this case. I think he will, he is that kind of a man. Call Mr. Hutchins. [60]

Testimony of Clinton J. Hutchins, in His Own Behalf.

Direct examination of Mr. CLINTON J. HUTCHINS, for libellant, sworn.

Mr. DAVIS.—Mr. Hutchins, what is your name, please?

A. Clinton James Hutchins.

Q. And where do you reside, Mr. Hutchins?

A. Well, I suppose all over.

Q. I mean where is your residence lately?

A. At the present time, Berkeley.

Q. In the State of California? A. Yes, sir.

Q. How old are you, Mr. Hutchins?

A. I am 47 now.

Q. What business were you in—following, in the month of February, 1916?

A. Well, I was a broker, and president of a farming company in California.

Q. What is that?

A. I was a broker, and president of a farming, a development company.

(Testimony of Clinton J. Hutchins.)

Q. In connection with that business, were you engaged in the buying and selling of land?

A. Not in selling land, but in buying land and developing of land.

Q. Developing land for farming and other agricultural purposes? A. Yes.

Q. How long had you been engaged in that business?

A. About two years, two and a half or three years.

Q. Now, previous to that, what business were you in, Mr. Hutchins? **[61]**

A. Previous to that?

Q. Yes.

A. I was in the insurance business for twenty years.

Q. Now, were you engaged in that business up to the 14th of February, before you left California?

A. Well, I was engaged in the brokerage business, and also in this land company.

Q. Well, do you have your business in San Francisco or Berkeley? A. San Francisco.

Q. San Francisco. Now, what were your earnings from your business at that time, per month?

Mr. WARREN.—Just a moment, I would like to have that question made more definite, and confined to a particular business. Two have been mentioned.

Mr. DAVIS.—From the business that you were then engaged in, what was your income?

A. Why, my income was above, along fifteen to twenty thousand dollars a year from all of my investments or activities.

(Testimony of Clinton J. Hutchins.)

Q. At any time was it ever less than fifteen thousand dollars?

Mr. WARREN.—I object to the question as leading.

Mr. DAVIS.—I will withdraw the question.

The COURT.—All right, proceed.

Mr. DAVIS.—What was the minimum that you earned, the minimum amount?

A. Well, it would be a little difficult to tell, because sometimes I would make a great deal of money and sometimes less. I think it would average about fifteen or twenty thousand dollars a year.

Q. Then fifteen thousand dollars would be the minimum? **[62]**

Mr. WARREN.—I object to the question—

A. I think so.

The COURT.—Objection sustained, although it has been answered.

Mr. DAVIS.—On the 14th of February, did you apply for a passage on board the "Great Northern?"

Mr. WARREN.—That is admitted.

The COURT.—You don't need to go into those matters which are admitted, Mr. Davis.

Mr. DAVIS.—All right, then let us have it specified now at the hearing, that Mr. Warren admits under the allegations of the libel that on the 14th of February the libellant with his wife took passage on the steamship "Great Northern" then lying in San Francisco, in the State of California, for a voyage to the port of Honolulu, in the Territory and District of Hawaii and return therefrom to the port

(Testimony of Clinton J. Hutchins.)

of San Francisco, and that the passage was a first-class passage and that he paid full-class rates, do you make that admission?

Mr. WARREN.—All except to the return, of which I have no knowledge.

A. Yes, I have a return ticket, Mr. Warren.

Mr. DAVIS.—You paid money into the office of the steamship company and received your tickets?

A. Yes, sir.

Q. For that voyage? A. Yes, sir.

Q. And you and your wife departed on that steamship on her voyage from Frisco to Honolulu on what date? A. On the 14th of February, 1916.

Q. Now, did anything happen about the 18th of February that was unusual? A. No, sir. **[63]**

Q. No. Now, on the 18th of February, Mr. Hutchins, in your own language, just state what did happen to you on board the steamship "Great Northern."

A. On the night before, on the 17th, I told the bath steward that I would like to have a shower-bath in the morning about half-past six, and he came and called me about half-past six and I got up and threw on my overcoat over my pajamas and went into the bath, and I hung up my overcoat and my pajamas and I went over to the bath and I turned the water on. There were two shower-baths facing each other, and I used the one facing the shower-baths on the right, and I went up to the shower-bath and put my hand in and put my right foot over into the bath,—it was rather a high bath, high-sided

(Testimony of Clinton J. Hutchins.)

bath, rather hollow, and I put my foot in it and felt of the water, the temperature of it on my arms, and then I put my left foot over, and then I slipped, and I put my hand out to catch hold of something and I fell over into the other shower-bath which was on the opposite side.

The COURT.—You mean on the other side?

A. Yes, I fell sideways, and I reached out for something to get hold of, but there was nothing to hold on to, and I felt a crunching in my shoulder, my arm slipped out from under me, so much so that it seemed to me that I dislocated the shoulder. It went out so far that my arm went right against my head. I endeavored to get up but my whole arm was useless, and I didn't seem to be able to get my breath. I was rather astonished at the feeling that I had in my arm, a peculiar feeling. The man came in at the **[64]** time I took the shower-bath, and it occurred to me at the time why that man didn't come to help me.

Mr. DAVIS.—Q. He come in? A. Yes.

Q. Render you any assistance?

A. He then came and he put an arm under my neck here, and there was a little door at the end of this passage between the shower-baths, and I reached up and got hold of the knob of the door and he lifted me up and I got up still gasping for breath. I walked over to the place where I first proceeded to take off my slippers, and as I sat down I couldn't simply breathe, my heart seemed to flutter a good deal, and he evidently saw my condition because he

(Testimony of Clinton J. Hutchins.)

picked up a lot of water in his hands from the basin there and threw some water in my face and I seemed to recover and feel better.

Q. Going back, and pay attention to me, now going back to the time you fell, was both feet in this basin?

Mr. WARREN.—I object to the question as leading.

Mr. DAVIS.—Where were both feet?

A. In the basin.

Q. Just before you fell just fully describe what you reached for and what you did particularly.

A. Why, as I pulled my left foot up and over following the right as I felt of the water and was going to get in the shower, the water was coming down very heavily, it was instantaneous, I put both feet in and I reached out to grab for anything.

Q. Was there anything for you to reach hold of?

A. Nothing.

Q. Where did you grab for, where did you reach for? **[65]**

A. Anything to get hold of.

Q. Your face was towards the back part of the bath? A. Yes.

Q. And how did you reach out?

A. I reached out as hard as I could with my right arm.

Q. And there was nothing to catch hold of?

A. No.

Q. Nothing there at that time—

Mr. WARREN.—That is leading him.

(Testimony of Clinton J. Hutchins.)

Mr. DAVIS.—All right. What condition was the surface of tub,—of the basin in at that time?

A. It was porcelain. It was filled with water and very slippery.

Q. Did you say the surface was slippery?

A. Very.

Q. What was the condition of the sea at that time?

A. Why, it was calm. I didn't notice any movement that morning. It was the only morning we had when there seemed to be none.

Q. Was the ship rolling or pitching?

A. Not that I noticed.

Q. You didn't notice it? A. No, sir.

Q. How large is this compartment, this shower-bath? A. The bath itself?

Q. Yes, the bath itself, in your judgment.

A. I think the bowls are about two and a half feet square and perhaps five or six inches deep, slightly concaved towards the center with a drain in the center of the bowl.

Q. And the sides of it, how are they made up?

A. Three sides of marble, polished marble. As I stepped in facing the back of the bath there were two pipes running up. [66]

Q. Now, at the back of this bath was there any handle to catch hold of in that particular shower-bath?

A. No handle that I know of either on the side or at the back of the bath.

Q. Neither at the back nor on the side?

A. None whatever.

(Testimony of Clinton J. Hutchins.)

Q. Now, could you have caught hold of the sides of these marble slabs?

A. If there had been any handle there I certainly wouldn't have fallen over. I could have held myself up.

Mr. WARREN.—The answer is not responsive, your Honor, I move it be stricken.

Mr. DAVIS.—I submit it is proper and competent.

The COURT.—Read the question and answer.

(Last question and answer read.)

Mr. DAVIS.—All right; that is not in answer to my question. Could you have caught hold and saved yourself from falling by catching hold of the side of this marble slab of the bath? A. No.

Q. If there had been a handle at the back of this shower-bath to catch hold of would you have fallen?

Mr. WARREN.—I object to the question as calling for the conclusion of the witness.

Mr. DAVIS.—I submit it is proper and competent testimony. It is a statement of his opinion of what he could have done, it is all through the depositions there.

The COURT.—I noticed you said would, you used the word would instead of could.

Mr. DAVIS.—I will use the word could, and thank you Honor [67] for the suggestion.

A. That would depend, Mr. Davis, how far the handle protruded from the back. If it was close to the slab I certainly couldn't have gotten hold of it. If it had been on the other side or had been extended at all I could have saved myself.

(Testimony of Clinton J. Hutchins.)

Q. If it had protruded a few inches you could have saved yourself? A. Yes, a few inches.

The COURT.—It is now noon. Recess until two o'clock. [68]

February 16, 1917, 2:00 P. M.

Direct Examination of CLINTON J. HUTCHINS, Continued.

Mr. DAVIS.—Now, Mr. Hutchins, when we took the recess, I was asking you with reference to this hand-rail at the end of that particular shower-bath. Was there any such a hand-rail there?

A. There was not.

Q. If a hand-rail had been there projecting at a reasonable and proper distance, in your opinion would you have fallen?

Mr. WARREN.—I object to the question as calling for the opinion of the witness.

Mr. DAVIS.—I submit it is a question of his right to decide upon. Their whole depositions are filled up with that stuff.

Mr. WARREN.—Would you have fallen?

The COURT.—Well, of course, it is a matter of opinion. I sustain the objection.

Mr. DAVIS.—Do you believe you would have fallen if you could have gotten hold of that?

Mr. WARREN.—Same objection, your Honor.

The COURT.—Objection sustained.

Mr. DAVIS.—At all events it was not there when you reached out there?

A. It was not.

Q. And then you fell? A. I did. [69]

(Testimony of Clinton J. Hutchins.)

Q. Yes. Was there any apparatus of any kind there in the back of that bath or on the sides to catch hold of, on the slabs, I mean?

A. On the left-hand side there was a couple of pipes—

Q. No, I mean projections, apparatus made for the purpose of catching hold of? A. No, nothing.

Q. Now, you say there was a couple of pipes. You mean by that one for conducting hot and the other cold water to the bath?

A. I suppose so, I don't—

Q. Yes, and they was tight against the wall, wasn't they? A. Yes.

Q. Yes, and you couldn't have got your hand around them? A. No.

Mr. WARREN.—I don't want to be interrupting all the time, but these questions are leading, your Honor.

Mr. DAVIS.—Well, could you have gotten your hand around? What difference does it make, the pipes are up against the slabs as I understand it.

A. I couldn't have gotten my hand around them. My feet flew out from under me and I fell like a catapult. I threw out my left hand to break the fall and struck on my elbow.

Q. There is a big difference between a zinc floor and a porcelain floor, a zinc surface to a porcelain surface?

Mr. WARREN.—I object to the question as leading, no foundation in the case.

(Testimony of Clinton J. Hutchins.)

Mr. DAVIS.—Is that so? I think I can compare the two.

The COURT.—It is leading, Mr. Davis.

Mr. DAVIS.—Well, maybe it is, but you have to ask leading [70] questions sometimes.

Q. All right. Now, Mr. Hutchins, with reference to that particular—with reference to the surface of that particular bath where your feet was resting, that was porcelain?

A. Yes, sir; smooth glazed porcelain.

Q. And you have already testified that it was very slippery. A. Yes, sir.

Q. Yes; and have you been on a zinc surface under the same circumstances? A. No, sir.

Q. Now, Mr. Hutchins, in what direction did you fall? A. I fell directly out of the shower.

Q. Directly out of the shower, but your back was to the entrance of the shower?

Mr. WARREN.—Object to that as leading.

Mr. DAVIS.—Was your back to the entrance of the shower?

Mr. WARREN.—Same objection, your Honor.

Mr. DAVIS.—That's absurd, I submit it is perfectly proper.

The COURT.—It is leading, Mr. Davis.

Mr. DAVIS.—You have already testified—now, I have the right to put this, I submit, your Honor, that counsel has no right, there is no use in counsel being so captious.

Q. Mr. Hutchins, you have already testified that your—that you were facing the rear of the bath, with

(Testimony of Clinton J. Hutchins.)

your back to the entrance? A. Yes, sir.

Q. Yes; now I want to know in which direction you fell.

A. My feet flew out and I turned on my side,—

Q. Yes, and fell on your left side—

A. And I fell on my left side. [71]

Q. Sure, you fell on your left side. Now, that's like this, eh? (Illustrating.) A. Yes.

Q. Then the wall of this shower-bath was on the starboard or port side of the vessel?

A. You mean the back?

Q. Yes.

A. It was on the port side, toward the port side?

Q. Exactly.

A. And I fell to starboard.

Q. Where did you strike after you fell out?

A. I struck in the shower-bath which was—a similar shower-bath which was directly opposite.

Q. You struck in that? A. Yes, sir.

Q. I want to be particular about it. Before you fell did you reach out with both hands or one?

A. Before I fell?

Q. Yes.

A. I had my hands out feeling for the water, and, then I pulled my left foot over and just as I put my weight on both feet they flew out from under me.

Q. Did you reach with your arms?

A. With my right arm.

Q. To grab something.

A. Yes, as I started to fall.

Q. And there was nothing to grab?

(Testimony of Clinton J. Hutchins.)

A. Nothing that I could get hold of.

Q. All right. Now, Mr. Hutchins, and then you felt this man catching hold of you?

A. Yes. [72]

Q. Yes, after you had fallen down. A. Yes.

Q. And where did they take you, Mr. Hutchins?

A. They laid me on a kind of a stool where I first sat down and removed my slippers, and sat me down, and I leaned back against the partition there.

Q. Had you lost consciousness up to that time?

A. I didn't lose consciousness at all.

Q. And where did they take you after that?

A. I sat on the stool and he called the steward and I told him that I was injured and he sent for the ship's doctor and the doctor came in and they led me and supported me to my stateroom.

Q. Yes, and then did the doctor go with you?

A. He went with me, yes.

Q. He and the steward?

A. Yes, I think it was the steward.

Q. Remember the name of the steward?

A. No, I do not.

Q. Then after you got in your stateroom did the doctor make an examination of your injuries?

A. Yes, the doctor of the ship, Dr. Macadory.

Q. That's what I mean, did he make an examination of your injury?

A. He made an examination of my arm and the bruises, that is, my person as well. He examined me to see if there was any other injury.

Mr. WARREN.—What is that last answer?

(Testimony of Clinton J. Hutchins.)

A. He examined my arm and looked me over to see if there were any other injuries.

Mr. DAVIS.—Now, Mr. Warren, surely you can hear, you are closer to him than I am, and I don't want this learned [73] gentleman to interfere with the continuity of this examination.

Q. What is Doctor Macadory's name, do you know his other name? A. Dr. R. J. Macadory.

Q. Kindly state what medical or surgical aid he rendered you at that particular time.

Mr. WARREN.—I object to that question as calling for the conclusion of the witness.

Mr. DAVIS.—Nothing at all; I asked him to state.

Mr. WARREN.—The witness may state as far as he can what the doctor did, but that question calls for a conclusion.

The COURT.—It calls for such particular facts as may be given. I overrule the objection.

Mr. DAVIS.—Go ahead and answer the question.

A. They sat me down on the settee in the room, and I told them I thought my shoulder was broken, and he took my arm and moved it around and felt of my shoulder, and he said no, it is a bad sprain. He said he could feel the broken points of the cartilage. He explained that around the edge of the shoulder socket there was a cartilage that had undoubtedly broken away, and that it was simply a sprain, that he could feel the prickly points of this cartilage, and then they laid me in my berth and he examined my limbs but didn't find anything further, and he gave me a couple of pellets, I think it was.

(Testimony of Clinton J. Hutchins.)

Q. Anything else?

A. Nothing else,—no, he asked me if I wanted some brandy, and I said I didn't drink anything. They laid me in my berth and he left me.

Q. What time was that, Mr. Hutchins, what hour of the day? [74]

A. I went in my bath very close to half-past six, a very few minutes after; it wasn't over five or ten minutes.

Q. When did you see the doctor again?

A. I think I met him on the deck that day.

Q. Did he call at your stateroom again that day?

A. Not that day. The next morning he came in.

Q. The next morning, at what hour?

A. I think it was while I was getting dressed.

Q. Did he put any bandages on your arm or take any other steps to render you surgical aid at that time? A. He did nothing further.

Q. Yes; do you know whether or not there is a hospital on board of that vessel? A. I do not.

Q. I will ask you whether or not you were suffering any pain at the time, Mr. Hutchins.

A. It became excruciating shortly afterwards.

Q. How long afterwards?

A. Within fifteen or twenty minutes or a half hour. They turned my pillow around so that my left side would be on the outer side of the berth. The berths on the "Great Northern" are very narrow, and pushed me a little over on one side so that my shoulder would not touch the side, but it was extremely uncomfortable and painful, and after I had

(Testimony of Clinton J. Hutchins.)

been there a few minutes I told my wife that it would be impossible for me to stay there. I wanted to get up and go on deck.

Q. Yes.

A. So I did get up, and with her assistance I dressed and went on deck, carrying my arm. It seems as though I felt [75] the necessity of supporting it, it was so painful. I unbuttoned my vest and forced my hand in and carried my arm this way until in fact we got to Honolulu.

Q. This doctor told you it was simply a sprain, eh?

A. Yes, a bad sprain, he said it would be all right in a few days.

Q. But he never came back to you until the next morning?

Mr. WARREN.—I object to the question as already asked and answered.

The COURT.—That has been answered, Mr. Davis.

Mr. DAVIS.—What time did he come back the next morning?

A. I think it was about eight o'clock.

Q. About eight o'clock?

A. He came in and moved my arm around a little more and said there was no fracture, that it was a bad sprain, and went out.

Q. Yes, and he did nothing else at that time, and that was the next day?

A. He didn't do anything any more at any time.

Q. Yes, and did he call on you at any time during the voyage after that? A. No.

Q. Now, Mr. Hutchins, how many days—that was

(Testimony of Clinton J. Hutchins.)

on the 16th, that accident? A. 18th.

Q. On the 18th that happened, and when did you get into port?

A. We got in Friday morning, the 18th, at half-past six, that is, we got into Hilo early in the morning of the 20th, Sunday.

Q. You got in there on the 20th? A. Yes. [76]

Q. And did you go ashore at Hilo? A. Yes, sir.

Q. Did you see any doctors there? A. No.

Q. At any time after you were injured did the captain visit you? A. No, not at all.

Q. Did any of the nurses on board the boat, the stewardesses?

A. They never visited me at all.

Q. Now, Mr. Hutchins, just when did you get to Honolulu? A. On Monday morning.

Q. Monday morning, what date?

A. The 21st, yes, the 21st.

Q. On the 21st, at about what hour?

A. I think it was about ten o'clock in the morning.

Q. Did any of the ship's officers visit you except the doctor and the steward, as you described him, after you received your injuries? A. No.

Q. Now, after you went up on deck, state—do you recall any incident,—some of the depositions disclose there that you presided at a mock trial, some divorce trial *that had* on board, is that true?

A. Yes, sir.

Q. Yes; well, now, were you suffering pain at that time?

(Testimony of Clinton J. Hutchins.)

Mr. WARREN.—I object to the question as being leading.

Mr. DAVIS.—What was your condition at that time?

A. Oh, I was suffering very severely; yes. I consented to be the presiding officer at this divorce case previously to being injured.

Q. Tell the Court the circumstances surrounding your doing that with your arm in that condition. [77]

A. I had consented, I had been asked to preside at this mock trial and had consented to do so, and after I was injured my wife tried to prevent my doing so, but I told her that anything that would take my mind off of this would be a good thing for me, and I consented.

Mr. WARREN.—That is inadmissible, the conversation between himself and wife, and I move to strike it out.

The COURT.—He can't state that, that is stricken out.

Mr. DAVIS.—Why did you go and preside there?

Mr. WARREN.—I object to that. I think that calls for a conclusion of the witness.

Mr. DAVIS.—All right, state the facts and circumstances.

A. I consented to act in this capacity, and desired to do so particularly because I felt that anything of that kind would relieve the pain I was undergoing and take my mind off of it. They had a table screwed down to the deck in the room where this was held, a

(Testimony of Clinton J. Hutchins.)

kind of a social hall, and I sat behind that and I supported my arm in my vest, and the table had some kind of a projection under it which I would get hold of and get up this way whenever I was called upon to get up.

Q. State whether or not you were suffering any pain at that time. A. Oh, I certainly was.

Q. And were you suffering pain from that time on until the vessel arrived in port?

A. Yes, sir; I certainly was.

Q. Now, after you arrived in Hilo, did you—I mean in Honolulu did you see other medical attendance and aid? A. Yes, sir; immediately. [78]

Q. Yes. And who did you consult?

A. I consulted Dr. C. B. Wood.

Q. Dr. C. B. Wood. Did you go to his office?

A Yes, sir.

Q. And did he make an examination of you?

A. He did.

Q. And then what did you proceed to do with reference to surgical aid?

A. I stripped so that he could make a thorough examination, and he hardly took hold of my arm before he said, "You have got a badly broken arm," he said, "I think it is an impacted fracture."

Mr. WARREN.—That is not admissible, your Honor; the doctor can testify.

The COURT.—Yes, he can't tell what the doctor said; that is for the doctor to say.

Mr. DAVIS.—Sure he can; I think it is clearly admissible to say what the doctor said.

(Testimony of Clinton J. Hutchins.)

The COURT.—He cannot.

Mr. WARREN.—I move to strike the answer, your Honor.

The COURT.—In so far as the witness has related what the doctor said, the testimony is stricken out.

Mr. DAVIS.—But the rest of it goes in.

Q. Now, he made a thorough examination of you?

A. He did.

Q. Now, do you know as a matter of fact you had suffered a fracture of the left arm joint, do you know that?

Mr. WARREN.—Unless the witness can answer of his own knowledge.

Mr. DAVIS.—Now, Mr. Warren, you are not going to take charge of this Court or the witness or me, he is doing that, your [79] Honor, and it has reached a point where I ask your Honor to interfere. He has a right to make objections, but he is not going to control this case from me. Your Honor can.

The COURT.—Mr. Davis, you must not exhibit so much temper.

Mr. WARREN.—In order that there will be no mistake in my position, I object to the question unless it is to be answered from the witness' own knowledge.

The COURT.—I understood his objection to be addressed to me at the time.

Mr. DAVIS.—I thought he was addressing it to the witness.

The COURT.—Perhaps you did if you thought so, but at the same time he was addressing me as to

(Testimony of Clinton J. Hutchins.)

what the witness knows of his own knowledge. Mr. Hutchins, if you know of your own knowledge what your injury was you may state it, but you cannot state it *from you* learned in a conversation.

A. I didn't know what was the matter with me.

Mr. DAVIS.—You don't know except what you got from the doctor? A. Yes.

Q. That's all right; then what did he do, the doctor, what did he do next?

A. He directed me to go to Doctor Straub and have an X-ray photograph taken.

Q. And did you do it? A. I did.

Q. And did Straub make an examination?

A. Not an examination of my arm, but immediately after he had taken the flash he went into—he took the slide and went into the dark room and asked me to lie still and he would let me know the result.

[80]

Q. Yes? A. And when he returned he said—

Q. Never mind that, after he returned what did he do? A. After he returned he said—

Mr. WARREN.—I object to that.

Mr. DAVIS.—Don't state what he said; state what he done.

A. Well, he helped me to dress and told me to go to Dr. Wood's office and have my arm dressed. I don't know how else I can state it.

Q. Yes, to go to Dr. Wood's office. What was done to your arm after that?

A. Dr. Wood bound my arm in about this position.

(Testimony of Clinton J. Hutchins.)

Q. How did he bind it?

A. With a regular bandage.

Q. How? A. Stretched around me.

Q. Just describe to the Court fully.

A. With twenty-eight yards of bandage put on every second day for—I think it was four weeks.

Q. How long a period?

A. For about four weeks, binding my arm in a certain position each time.

Q. How many times did you have occasion to visit Dr. Wood and Dr. Straub?

A. I saw Dr. Straub but once, and Dr. Wood fourteen or fifteen times.

Q. Fourteen or fifteen times?

A. Or more, fifteen or twenty times.

Q. How long was your arm—how long before he took the bandages off? A. Four weeks.

Q. Did Dr. Straub and Dr. Wood render you any account, any [81] bill for their services?

A. Both of them did; yes.

Q. How much?

A. Why, I am not quite sure. I think that Dr. Wood's bill was $110.00.

Q. And how much was Straub's?

A. I am not quite certain of that, but I think $15.00.

Q. Did you pay them both? A. I did.

Q. Did Dr. Wood give you any medicine outside of the bandages? A. No.

Q. Were you able to return—had you arranged to

(Testimony of Clinton J. Hutchins.)

go back to the coast at any certain date when you came here?

A. I had return tickets on the "Great Northern."

Q. When did she return?

A. She returned on the 21st.

Q. Were you able to go on that return of the "Great Northern"? A. I was not.

Q. Why?

A. Why, because I had to return to Hilo where I had to attend to the business which I should have done as I came down, and which I was not able to attend to on account of my condition.

Q. Well, now, from the time that you arrived here in Honolulu—as soon as you arrived here you went right straight to the doctor of your own volition, did you? A. I did.

Q. Did the ship's doctor suggest that you go and see another surgeon at any time?

A. Not the ship's doctor.

Q. That's what I am saying, or did the captain of the vessel? [82] A. He did not.

Q. No, or did any of the officers? A. None.

Q. Now, do you know whether or not there was any doctors on board travelling as passengers?

Mr. WARREN.—I object to that as being incompetent, immaterial and irrelevant.

Mr. DAVIS.—I submit it is perfectly competent and material. Here is a passenger ship and here is the ship's doctor here, and in the event of any accident at sea or anything, if there are any doctors on board that ship he has a perfect right to have him.

(Testimony of Clinton J. Hutchins.)

Mr. WARREN.—I withdraw the objection.

Mr. DAVIS.—Do you know if there were any other medical men on board, surgeons?

A. There was a surgeon from some place in Massachusetts; I passed along the deck one day, one evening—

Mr. DAVIS.—I don't think you have any right to state the conversation you had with him. He saw the condition of your arm. I will ask the question anyway.

Q. What did he say about your arm?

Mr. WARREN.—I object to the question.

The COURT.—Objection sustained. That is hearsay.

Mr. DAVIS.—Did he make any statement or give you any advice?

A. He did.

Q. He made no examination though? A. No.

Q. Let him object to this and rule it out. Did you tell *you* that instead of a bruise you had a fracture?

Mr. WARREN.—Same objection, your Honor.

The COURT.—I sustain it.

Mr. DAVIS.—I offer it anyway, that is what the doctor said. [83]

Mr. WARREN.—I move to have the comment of counsel stricken.

The COURT.—Of course, that is not in evidence.

Mr. WARREN.—That is what the doctor said, he said.

Mr. DAVIS.—I am offering it.

The COURT.—The Court holds that the state-

(Testimony of Clinton J. Hutchins.)

ment of the doctor was hearsay.

Mr. DAVIS.—That ought to go in the evidence.

Mr. WARREN.—Oh, you want the Court to hear it, is that the idea?

Mr. DAVIS.—No, I want you to hear it for your information to show up this valuable doctor you had on board there to fulfill the terms of your contract.

The COURT.—Gentlemen, we haven't time for this, and I have already ruled now.

Mr. DAVIS.—I beg the Court's pardon.

Q. Now, Mr. Hutchins, you remained in Honolulu how long?

A. The 21st of February the Northern Pacific ship went back to Hilo and I went back on her.

Q. The 21st of February, and when did you get back to San Francisco? A. April 5th.

Q. April 5th. Now, how long before you were relieved of the pain, can you give us the date as near as you can, if you have been relieved yet?

A. The continuous pain— Oh, I couldn't say, Mr. Davis, it was quite a long period.

Q. Three or four months?

A. The continuous pain?

Q. Yes. A. No, not that long.

Q. How long then?

A. Well, it was, perhaps, four or five weeks. [84]

Q. Do you suffer any pain in there now at times?

A. At times, yes.

Q. Mr. Hutchins, did you ever go on board of the

(Testimony of Clinton J. Hutchins.)

"Great Northern" and make an examination of that bath-room? A. I did.

Q. When?

A. After she came back here on her trip afterwards.

Q. What month was it?

A. Some time about the middle part of March.

Q. About the middle of March? A. Yes, sir.

Q. And when you went aboard the "Great Northern," did you go to this same bath-room?

A. I did.

Q. Anybody with you? A. No.

Q. Wasn't there some steward to go with you?

A. Not at that time.

Q. Well, did you see the bath?

A. I went in, yes, and looked at it.

Q. Now, I want to ask you with reference to the back of the place, was there any handles or projections there? A. None.

Q. You are sure of that? A. Positive of it.

Q. And it was the same shower-bath that you had fallen in? A. It was.

Q. And was injured in?

A. Yes. I went again on the day that she came in, and on the trip again after that.

Q. Anybody with you at that time?

A. Yes, one of the stewards who had been my table steward when I made the first trip. [85]

Q. What is his name?

A. Lefebre, a French boy.

Q. Any hand-railing at the back or other appara-

(Testimony of Clinton J. Hutchins.)

tus when you went that time?

A. There was none.

Q. Did you go aboard after that?

A. No, that was the last time.

Q. What date was that?

A. It was, I think, the 31st day of March, the day she got in here from San Francisco, on the second trip after I was injured.

Q. And that was the same bath?

A. Same bath.

Q. The same shower-bath?

A. The same one, the same condition.

Q. In which you were injured? A. Yes.

Q. No hand-railing of any kind?

A. None whatever.

Q. Mrs. Hutchins was with you on that trip?

A. She was.

Q. And she returned to San Francisco when you did? A. And also went to Hilo with me.

Q. Yes? A. Yes, sir.

Q. During your pain and illness, you say you received no attention from any of the nurses or stewards on board connected with the vessel?

Mr. WARREN.—I object to the question as asked and answered, your Honor.

The COURT.—I think he has already stated that.

Mr. DAVIS.—Did your wife attend to you during your illness on that trip? A. She did.

Q. Your ticket was taken up, was it, during your illness on [86] that trip, by somebody, some officer of the trip? A. The return portion?

(Testimony of Clinton J. Hutchins.)

Q. Yes.

A. Yes, I turned it into Waldron's and received the amount I had—the difference, that is, what the return fare amounted to.

Q. Yes, I know, but your ticket for your passage down from San Francisco to Honolulu, that ticket was taken up by anybody?

A. It was taken up by—

Q. By whom?

A. By some officer on board the steamer.

Q. The purser?

A. Either the purser or his assistant.

Q. Both tickets, for you and your wife on that voyage? A. Yes.

Q. How much money did you pay for the passage, Mr. Hutchins?

Mr. WARREN.—I object, incompetent, irrelevant and immaterial.

Mr. DAVIS.—That goes to the validity of the marine contract. I submit it without further argument. It is absurd. He has a perfect right to state how much he paid for the passage.

The COURT.—Overruled.

Mr. DAVIS.—How much did you pay, Mr. Hutchins,—incompetent and irrelevant, like your assumption of risk,—how much did you pay, Mr. Hutchins?

A. I think I paid $80.00 apiece—that is double, less 10%, that would be $134.00 each. $268.00 I think was my check.

Q. And you paid that to the agents of the com-

(Testimony of Clinton J. Hutchins.)

pany in San Francisco before you got on board?

[87] A. I did.

Mr. DAVIS.—It would be a nice thing if this record went up and I hadn't proved the amount paid in for fares.

The COURT.—You need not comment, Mr. Davis.

Mr. DAVIS.—Are there any other events or circumstances—I beg your Honor's pardon—any other events and circumstances connected with this matter that you would like to state, Mr. Hutchins, that I have not asked you about?

Mr. WARREN.—I don't think that is quite proper, your Honor, and I object to it.

Mr. DAVIS.—I think he has a perfect right to say.

The COURT.—That is a question asked in a deposition, but if you wish you can consult with him so as to give counsel an opportunity to object.

Mr. DAVIS.—Is there anything else, Mr. Hutchins?

Mr. WARREN.—Same objection.

Mr. DAVIS.—It would save a lot of time, your Honor.

The COURT.—You can consult with him.

Mr. WARREN.—I object to that, your Honor, to counsel addressing the witness on the stand.

Mr. DAVIS.—I want to know if there is anything else, that is all, and he is going to tell me. All right, we will take him off the stand, withdraw him for a moment. Puts me in mind of a box I had a Christmas time when a little boy, with something inside that jumps up and down and in and out.

(Testimony of Clinton J. Hutchins.)

Mr. WARREN.—I wouldn't like to be seen doing that myself.

Mr. DAVIS.—Now, Mr. Hutchins, did you have any conversation with the chief engineer of this steamship about your accident? A. I did. [88]

Q. When was it?

A. It was on the day of the accident.

Q. On board the steamship? A. Yes.

Q. What did he say to you?

A. I was at his table and—

Mr. WARREN.—I object to that as hearsay, and incompetent testimony, it has got to be a general line of conversation occurring in the line of duty of this engineer as a witness. Conversations between persons merely because they happen to be employees of the company do not make it admissible.

The COURT.—Conversations in order to be admissible, Mr. Davis, must have relation to their particular duties.

Mr. DAVIS.—Who was the engineer?

A. The chief engineer, Mr. Morris.

Q. Did he have supreme control of the bath-tubs?

A. That I don't know.

Q. Mr. Hutchins, how many times had you been in that particular bath-room before you entered it that morning, the 18th?

A. Never been there before.

Q. That was the first time?

A. First time.

Q. State with reference to the surface of that

(Testimony of Clinton J. Hutchins.)

basin as to whether or not it was flat or curved or how.

A. It was slightly concaved towards the center.

Q. Have you any children, Mr. Hutchins?

A. I have one daughter, one child.

Q. Is she living at home with you now?

A. In Berkeley.

Q. She is not married yet? A. No.

Q. Living at home? A. Yes.

Mr. DAVIS.—That is all. [89]

Cross-examination of CLINTON J. HUTCHINS.

Mr. WARREN.—Were you a resident of Berkeley, Mr. Hutchins, at the time this accident occurred?

A. Yes, sir.

Q. And when this libel was filed? A. Yes.

Q. And still are?

A. I have a residence there. Honolulu is really my home. I am there on account of the education of my daughter.

Q. How is that?

A. I am there for the education of my daughter, so that my wife can be with her. She is at the University of California.

Q. Where is your domicile?

A. At the present time?

Q. Yes.

A. You mean—well, I am living at the Young Hotel. I have this home in Berkeley.

Q. Your home is Berkeley, and your family is there? A. My family is in Berkeley.

Q. How long have you been living there?

(Testimony of Clinton J. Hutchins.)

A. Since July, 1911, the beginning of the University term.

Q. You left Honolulu at that time, left these Islands? A. In 1909; March, 1909.

Q. And from then on have resided in San Francisco? A. San Francisco and Berkeley.

Q. Just what is the nature of your brokerage business, what particular kind?

A. Especially handling molasses. [90]

Q. Will you specify a little more particularly?

A. Why, particularly handling molasses as I stated, molasses, brokerage in molasses.

Q. Buying and selling molasses? A. Yes.

Q. And how long have you been in that particular business?

A. Something over a year, a year and a half.

Q. Beginning when? A. October, 1915.

Q. Any other brokerage business besides that?

A. Why, I have handled some land brokerage but very slight. My principal activities have been along the line of handling molasses in a brokerage way.

Q. Practically exclusively from October of 1915?

A. Practically so, yes.

Q. And you still are? A. Still am.

Q. Engaged in that business? A. Yes.

Q. And this other business you have mentioned, what is the name of that concern?

A. The California Unit Farms Company.

Q. Is that a partnership or a corporation?

A. A corporation.

Q. Where is its place of business?

(Testimony of Clinton J. Hutchins.)

A. San Francisco.

Q. Where are its properties situated?

A. In the city of Oakland, county of San Joaquin and county of Glenn, California.

Q. How long have you been in that business?

A. Two years and a half or three years.

Q. What is your own connection with that concern? A. I am the president of it.

Q. To what extent are you the owner of stock in that corporation, Mr. Hutchins? **[91]**

A. About 80 to 85% I think it is, of the stock, I am not certain.

Q. You are the manager of that business?

A. Yes, sir.

Q. What is the capital stock?

A. The issued capital is $265,000.00, I think it is $264,000.00.

Q. And what is the extent of its holdings, real estate?

A. We have 640 acres in Glenn county, 80 acres in San Joaquin county, and a lot in Oakland, on Broadway.

Q. With the exception of the lot in Oakland that is agricultural or farming land?

Mr. DAVIS.—I object, your Honor; he can't go in to find out all about this man's income, he can't pry into anybody's private affairs beyond a certain limit. This is not a fishing expedition to find out and turn Mr. Hutchins' private affairs inside out about his income.

(Testimony of Clinton J. Hutchins.)

The COURT.—I don't see what that has to do with it, Mr. Warren.

Mr. WARREN.—I am going into just that point, your Honor. I will put the direct question.

Q. What have you received from this corporation in the way of income and returns?

A. My salary is $5,000 a year.

Q. And have you received any income from that corporation in the way of dividends?

A. Not yet; no.

Q. Has your salary as manager of that corporation been interrupted by reason of your trip to Honolulu in 1916? A. No. [92]

Q. You lost nothing from your salary?

A. Nothing at all.

Q. When you went to San Francisco in 1909, in what business were you then engaged?

A. Insurance.

Q. And from then on up to October, 1909?

A. Up to October, 1909?

Q. October, 1915.

A. About 1911, October, 1911, I retired from business entirely.

Q. And when did you next engage in business?

A. Along in 1913.

Q. In the business of buying and selling molasses; and what are the various sources of supply, where?

A. The beet sugar companies of California and the Hawaiian Islands.

Q. What was the object of your trip to Honolulu?

(Testimony of Clinton J. Hutchins.)

A. To arrange to store and purchase their molasses.

Q. From the various sugar plantations in these islands? A. Yes.

Q. You had purchased a round trip ticket on the "Great Northern"? A. Yes.

Q. Had your plan—was it your plan to return by the same vessel on the same round trip? A. Yes.

Q. That would have given you how many days in Honolulu? A. Five.

Q. And one day at Hilo?

A. Yes, that was coming. Two days in Hilo, was *was* coming here on the "Great Northern" and going back on the "Northern Pacific." The "Northern Pacific"—the round trip was not on the "Northern Pacific," by the way; it was to come here [93] on the "Great Northern" and to go back on the "Northern Pacific."

Q. On the "Northern Pacific"?

A. Yes, the two boats came here at the same time, and I was to transfer from the "Great Northern" to the "Northern Pacific" after two days in Hilo.

Q. That would give you five days in Honolulu?

A. Five days in Honolulu and two days in Hilo.

Q. You were anxious to get back to San Francisco? A. Very.

Q. How was your time occupied in Honolulu, during, say, these five days?

A. Well, I was principally looking after my—going to the doctor's office. I went to the doctor's office every other day at eleven o'clock and had my

(Testimony of Clinton J. Hutchins.)

arm bound, and the balance of the time I was about the town.

Q. You say that you went back to Hilo to do something there that you had been unable to do on the stop over with the "Great Northern"? A. Yes.

Q. When did you go back to Hilo?

A. I went back on the "Northern Pacific" on the 21st.

Q. On the 21st of February? A. Yes.

Q. How long did you remain in Hilo?

A. We got there Sunday morning and left there Tuesday noon on the "Kinau,"—I mean on the "Maunakea," and came back here.

Q. You arrived back here on what day?

A. On Sunday, I think it was Sunday,—or left there Monday or Tuesday, I don't know which. The regular trip of the [94] "Maunakea," whatever it was.

Q. The first return of the "Maunakea" to Honolulu after the "Northern Pacific" landed you at Hilo? A. That is it.

Q. Roughly, can you say how many days you spent in Hilo? A. I think it was two.

Q. Not more than that?

A. Not more; I am not certain whether it was one or two, or a day and a half, something like that.

Q. At Hilo? A. At Hilo.

Q. Where did you go and what did you do?

A. Why, I arranged for the putting in of foundations for storage tanks for the holding of molasses and employed men to take charge of it and so forth,

(Testimony of Clinton J. Hutchins.)

and arranged for the contracts for the levelling of the tank site.

Q. That tank site was for a storage tank, you say, for molasses? A. Yes, two storage tanks.

Q. Which you were to obtain from the plantations on the railroad? A. Yes.

Q. At that time had you contracts for molasses from the plantations, any of the plantations there?

A. Yes, I had contracts for eight of them, I believe.

Q. For what plantations?

A. Olaa and Waiakea.

Mr. DAVIS.—Is it necessary to go into the details of that? I object to it as not proper cross-examination, and not tending to prove or disprove any of the issues in this case.

The COURT.—I can't see the relevancy of this. [95]

Mr. WARREN.—If your Honor please, this libel alleges that the libellant was compelled to remain in Honolulu unable to return to the coast, was anxious to get back there and was being kept away from his business at which he was earning from $15,000 to $20,000 a year, and I am going into the question of what this business here was, what he was here for and how long it took him to prosecute it—

Mr. DAVIS.—Why does he want to know the names of the plantations? He has no right to know that.

The COURT.—The plaintiff has chosen to ask damages by reason of alleged interference with his

(Testimony of Clinton J. Hutchins.)

business. In case a vessel is libelled for damages for breaches of marine contracts, one of the elements alleged in the libel is that his injury interfered with his business here and back at San Francisco, and therefore it becomes proper to indicate now just what was his business here.

Mr. DAVIS.—I withdraw the objection.

The COURT.—I think it is legitimate testimony in view of the explanation made by Mr. Warren.

A. Olaa, Waiakea, Pepeekeo, Honomu, Laupahoehoe, Kaiwiki, Kukaiau and the Honokaa Mill.

Mr. WARREN.—When were those contracts negotiated, Mr. Hutchins?

A. Before I came to the islands.

Q. For all of those you have named you had closed the contracts before coming?

A. Well, they had not been entirely closed, I think, but they were agreed upon.

Q. What ones had been closed?

A. I don't think the Olaa contract was closed until after I got here, just as I got here. [96]

Q. When was it closed?

A. I guess it had been closed. It was agreed upon, but whether the actual signatures had been affixed I am not certain. It was a little different contract from the others. I made arrangements by cable for the Olaa contract, whether it was actually signed and delivered before that I am not certain, Mr. Warren.

Q. Are you able to state with certainty what contracts were entirely closed before you came here?

A. Contracts for the Papaloa, Laupahoehoe, Kai-

(Testimony of Clinton J. Hutchins.)

wiki, Kukaiau, Honokaa Mill and Waiakea.

Q. Those were all Davies & Company's plantations? A. Davies and Company's plantations.

Q. When was the contract for Olaa closed?

A. Well, I said that I am not quite certain. That was agreed upon by cable before I got here, and I think also with the Pepeekeo and Honomu.

Q. In connection with the Olaa plantation, did you have communications with the agents of that plantation here in Honolulu after your arrival?

A. It seems to me that there was one clause that was taken up after I got here, but I am not certain.

Q. Was that taken up by you with the agents here?

A. Yes.

Q. When?

A. I think immediately after,—well, I think right after I came back from Hilo, I am not certain. I saw Mr. Eckart in Hilo, and I took it up with Mr. Mackenzie I think immediately after I got back, but I am not sure.

Q. How about the Pacific Sugar Mill and Honokaa? [97]

A. That was closed after I returned from the coast. I returned to the coast again on the 5th of April and returned on the 15th of May.

Q. As you came back to the islands? A. Yes.

Q. On the 15th of May? A. Yes.

Q. While here on a trip from the "Great Northern" and before returning on April 5th, did you carry on negotiations with the agents of these plantations here in Honolulu?

(Testimony of Clinton J. Hutchins.)

Mr. DAVIS.—By and by he will be asking him if he was in the Judd building, on the top of it. Your Honor can limit it or we will be sitting here all day. He is going into all kinds of details—

The COURT.—When you get through with your objection, Mr. Davis, I will rule on it. Of course, there are certain secret matters about his business which cannot be inquired into, but in view of the allegation that this injury had interfered with his attention to his business he is entitled to go into the details of that matter and inquire whether it did or did not, by asking what he did and have him explain everything that he did here, because one of the elements alleged is that this injury interfered with his attention to his business.

Mr. DAVIS.—What was the last question, Mr. Reporter?

(Last question read.)

The COURT.—The allegations are that his injury interfered with his business and he has the right to cross-examine.

Mr. DAVIS.—Yes, but not to go into every minute detail and trace it step by step.

The COURT.—He cannot make him disclose his confidential business relations with these people but he has the right [98] to find out how he occupied his entire time—

Mr. DAVIS.—All right, I will withdraw the objection to save time. Mr. Hutchins has nothing to hide, he don't care.

The COURT.—Proceed with the examination.

(Testimony of Clinton J. Hutchins.)

Mr. WARREN.—Read the last question please, Mr. Reporter.

(Last question read as follows: While here on the trip from the "Great Northern" and before returning on April 5th, did you carry on negotiations with the agents of these plantations here in Honolulu?)

A. I think I did, yes, with Schaeffer & Company.

Q. When? A. Just before I left.

Q. Just before you went up?

A. Yes, around the first of April, around there some time, as I remember, that is, for the Honokaa and the Pacific Sugar Mill.

Q. When did you open these negotiations?

A. That I don't know, Mr. Warren, I haven't much idea when I *I* did open them up. I don't think I opened them up before April 1st, just before I left, I think I got a cable in regard to molasses that sent me in there.

Q. Then, to the best of your recollection, Mr. Hutchins, the negotiations by you for molasses from Honokaa and the Pacific Sugar Mill were not opened before you came here? A. I don't think they were.

Q. Now, what other plantations or agents did you approach here in Honolulu on that trip, to buy molasses?

A. I think I wrote a letter to Alexander & Baldwin, and I think that is all, but I am not certain, Mr. Warren, between the time I was here at that time and my next trip exactly [99] what my movements were regarding molasses. I came right back and I

(Testimony of Clinton J. Hutchins.)

was here three months and a half. When I got back I negotiated with practically all the houses at that time when I returned, but I don't remember when the negotiations were started, whether it was before I left the coast or while I was here. I remember writing a letter to Alexander & Baldwin regarding molasses on Kauai.

Q. When were you on Kauai?

A. No, regarding molasses from Kauai from other plantations on Kauai.

Q. What about their Maui plantations?

A. I don't think I had any negotiations at all for Maui.

Q. Any Oahu plantations negotiated for by you during that stay here then?

A. Not that I remember, I think not.

Q. When you went to Hilo, as I understand it, you say on the 21st? A. The 21st, yes.

Q. Of February? A. Of February.

Q. By the? A. "Northern Pacific."

Q. The "North Pacific"?

A. The steamship "Northern Pacific."

Mr. DAVIS.—That's a sister ship of the "Great Northern."

Mr. WARREN.—Yes. Did I understand you to say a while ago that you were expecting to make your return to the coast on the "Northern Pacific"?

A. Yes.

Q. When she left here, Honolulu, on the 21st?

A. Yes.

Q. On the 21st of February for Hilo, and how

(Testimony of Clinton J. Hutchins.)

many days did [100] you have here in Honolulu between times?

A. Five between the time I went to Hilo and the time I got here. I got here Monday and left Saturday.

Q. The accident occurred on the 18th of February?

A. The accident occurred on Friday, the 18th. We arrived here on Monday, the 21st and I sailed for Hilo on Saturday the 26th on the "Northern Pacific."

Q. I understood you to say that you sailed for Hilo on the 21st.

A. The 26th. Dr. Wood bound my arm so that it would remain so until I got back, and he bound it directly on my return.

Q. And on that trip you were contemplating stopping off at Hilo attending to the matter of the tank site and then coming on to Honolulu?

A. Yes, sir.

Q. Then returning by the "Northern Pacific" stopping at Hilo again and going home? A. Yes.

Q. How long a stop did the "Great Northern" make at Hilo coming down? A. One day.

Q. And the "Northern Pacific" going back?

A. One day.

Q. One day. Between the time that you arrived in Honolulu on the "Great Northern" and left for Hilo on the "Northern Pacific," what did you do in Honolulu?

(Testimony of Clinton J. Hutchins.)

A. Well, I don't remember doing much of anything, Mr. Warren.

Q. Did you undertake to do any molasses business?

A. That I couldn't say. I don't recollect that I did. The carnival was on, and I don't think I did any business at **[101]** all, don't remember that I took up any business at all in that week; I am not sure about that.

Q. Were you able to be about? A. Oh, yes.

Q. And then would you say that the carnival had more to do with your being idle in that interval than your arm?

A. Oh, my arm didn't interfere particularly with my getting around. I could talk with anybody with my arm in a sling or bound up just as well as with it unbound. It was the delay here, delayed me very much for a time, and in San Francisco I had some very important contracts on that were entirely shot to pieces by my being delayed here.

Q. Then as far as your arm was concerned you were able to have done business here?

A. Oh, yes; except that I didn't feel very much like doing business, you understand. There was no particular reason why I should not except that my feeling was bad, I didn't feel well, I suffered a good deal of pain.

Q. You had fully contemplated concluding your Honolulu business in those five days? A. Yes.

Q. Just what was the business you intended to finish up in those five days?

(Testimony of Clinton J. Hutchins.)

A. The principal business was looking up figures on pumps and piping and the building of these foundations, et cetera, of these tanks. We thought we would have to have them done at the Honolulu Iron Works, and as soon as I took it up with them they said the Hilo Iron Works would take care of it. I also took it up with Catton, Neill & Company, I think immediately I got here, the day after we got in or two days after, on Wednesday I think it was, I took it up **[102]** with Catton, Neill & Company. I also had an interview with a man here that I wanted to employ to go to Hilo and take charge of these large tanks we were going to put up.

Q. So that your business had more to do with the arrangements for construction and management of the tanks than with the negotiations of molasses contracts? A. Oh, yes.

Q. At that time? A. Very much more so.

Q. You have had a number of molasses contracts in suspense before you left San Francisco?

A. No, they were all closed except possibly Olaa.

Mr. DAVIS.—Does your Honor think he ought to go on with this cross-examination; he has been a half an hour on molasses contracts.

A. Let him take another hour.

Mr. DAVIS.—I submit it is exhausted.

The COURT.—I don't think so. Go ahead.

Mr. WARREN.—Your later trip in May was for what purpose, Mr. Hutchins?

A. For the purpose of purchasing molasses.

Q. During your stay in Honolulu on the first trip,

(Testimony of Clinton J. Hutchins.)

the five days, did you make arrangements for the construction of the tanks?

A. No, the construction was on the coast.

Q. Yes.

A. And as soon as I could get the facts and data I cabled to the coast fully about it and arrangements were made there, and when I went to Hilo I arranged with the Hilo Iron Works and with a contractor to go ahead and do the work. **[103]**

Q. And did you get that matter concluded before you went to Hilo, as far as that work in Honolulu was concerned? A. Not entirely, no—

Q. You had figured before that by going through to Hilo on the "Great Northern," one day would have been sufficient for that business?

A. A day going there on the "Great Northern" and a day going back on the "Northern Pacific" would have been amply sufficient if I had been in shape to take care of it going down.

Q. Did you take up any other kind of business in Honolulu when here on that trip than you have mentioned?

A. I don't think so except incidentally.

Q. Did you endeavor to do anything with the introduction of barrels as containers for plantation products instead of sugar bags?

A. No, I did not make any effort toward it.

Q. You broached that matter to the sugar people, did you? A. Yes.

Q. Anything else? A. Not that I remember.

Q. Did you have with you some samples of paper

(Testimony of Clinton J. Hutchins.)

made from cane bagasse?

A. No,—yes, I did have some. I had some small packages; yes, I did.

Q. What did you do with those?

Mr. DAVIS.—Is that material or competent what he done with them? I submit it is improper cross-examination.

The COURT.—I think it is improper, Mr. Warren, what he did with them. I think it is immaterial. Sustain the objection.

Mr. WARREN.—In your business at San Francisco, Mr. Hutchins, [104] did that extend to the general promotion and endeavor to market or utilize commercially other products of sugar than molasses?

A. No, I don't think it did. What products do you refer to?

Q. Any products of sugar-cane other than molasses. A. My activities in San Francisco?

Q. Yes.

A. No, I don't think so. If you will be a little more definite I can probably answer you more clearly.

Q. I will specify the utilization of sugar *can bagasse* for the manufacture of paper and paper pulp.

A. I never had anything to do with it at all.

Q. At San Francisco? A. Never.

Q. Did you endeavor to do any business with that article in Honolulu?

A. No, friends of mine had this—

Mr. DAVIS.—Never mind the friends. He asked

(Testimony of Clinton J. Hutchins.)

you a question and you answered it. What is the use of going on about the friends?

Mr. WARREN.—When you left for Hilo, you say you had not quite concluded the arrangements here of getting data about the tanks. How much longer time did you require?

A. Well, I possibly could have finished up by a strenuous effort, but I knew I could not safely travel back to the coast, and I wanted to be with Dr. Wood while I was here, my physician. I didn't feel that I was in any position to travel.

Q. Without strenuous effort what further time would you have reasonably *have* required to finish that particular work?

A. Well, that is entirely a case that I can't say, Mr. Warren, [105] because I don't remember now what proportion I had to do. Whatever it was, when I knew what the condition of my arm was I knew I would be detained here, I couldn't very well go back to the coast,—I don't remember the date that I sent the final cable off to the coast advising the purchase of pumps and so forth, on the coast.

Q. At the outside how many more days do you think it would have taken if you had put your time to it?

A. If I had devoted my whole time to that and nothing else?

Q. Yes.

A. I suppose to do it thoroughly it would have taken me ten days.

(Testimony of Clinton J. Hutchins.)

Q. That was the business that you expected to do in five days? A. Yes.

Q. And when did you find or consider it would have taken you ten days?

A. Well, I have a certain line of action I laid out for myself which would have taken me five days, but when I found my condition I changed my tactics so that I could do it more thoroughly. I could have been satisfied with the information I had and gone ahead—

Q. You could have? A. Yes.

Q. But you decided for yourself that you would have to remain in Honolulu on account of your arm?

A. Yes, Doctor Wood advised me to.

Q. Yo returned from Hilo on February 28th, did you say?

A. Well, whenever—when does the—I think we left there the 28th and got back here on the—when does the "Maunakea" get in? On Tuesday or Wednesday I got back from Hilo.

Q. Leaves here Wednesday and Saturdays, but gets here Tuesday [106] morning.

A. That's it, we left there Monday afternoon. I was in Hilo from Sunday morning until Monday afternoon finishing up what there was to be done.

Q. You say the carnival was on when you were here then? A. No, it was the previous week.

Q. What is that?

A. It was on between the 21st and 26th.

Q. On arriving at Honolulu did you have any time set for your return? A. Yes, the 26th.

(Testimony of Clinton J. Hutchins.)

Q. And finding that you could not return by that date did you book for any other vessel?

A. I don't think so. The date of my departure was very uncertain until I knew what the result of my arm, my injury was going to be.

Q. You had the bandages on for four weeks?

A. Four weeks, yes.

Q. How frequently did you go to Doctor Wood for attention during those four weeks?

A. Every other day.

Q. Except the time you were at Hilo?

A. He dressed my arm just as I left, an hour before I left, and I went to him immediately after I got back.

Q. Did you make any other island trips while here? A. None, no.

Q. After the bandages were removed how long did you continue to go to the doctor?

A. I went to him until I left, I don't know how often. The bandages came off about the 18th or 20th of March and I [107] left on the 5th of April. I think I saw him three or four times during that time.

Q. Now, what prevented your leaving for the coast about the middle of March?

A. The bandages were not off.

Q. What prevented your leaving when the bandages had been taken off?

A. Nothing, except I booked with the "Maunakea," I think—I mean the "Matsonia" and went on the first steamer after I was in position to travel. I

(Testimony of Clinton J. Hutchins.)

know I didn't delay any longer than I could help. I got out at the first instance.

Q. Between the time that the bandages were taken off and the time you left you were still conducting negotiations with Honokaa and Pacific Sugar Mill?

A. I don't think so.

Q. Sure of that?

A. I don't think so. Then until April, just when I left for the coast, I got a cable and went in and saw them, I think it was along about the 1st of April, as I remember, the first time I ever saw them about it.

Q. Did you take it up with them other than personally prior to that?

A. That I could not say, Mr. Warren. I don't remember whether I did or not. I don't think so. As I remember, I had no idea of Honokaa molasses until this cable came, that is my impression as I remember now. There was a great deal of talk about that Honokaa molasses, how it was going to be handled, and so forth. I am not sure about that, it seems to me I did have some negotiations with them, too. I think [108] I did; I think we all drove down to look at a site, a possible site for a tank, but I am not sure of what that was, what date that was, but I think just before I left for the coast, I am not certain.

Q. You say that was after you got a cable?

A. I think so, I think so, yes, and I figured that the molasses would have to go to Honolulu to get it out.

Mr. DAVIS.—You are still on the molasses, Mr. Warren?

Mr. WARREN.—Yes, it's sticky stuff.

(Testimony of Clinton J. Hutchins.)

Q. In the matter of your passage ticket, on surrendering to the company the return coupon you had, you had a refund made for that?

A. Yes. The refund was the difference between the cost of a first-class ticket and what I had paid.

Q. The difference between a single and round trip?

A. Yes.

Q. In making the surrender of that ticket did you state any reason to the company for it?

A. That I don't remember that I did; I could not tell you whether I did or not.

Q. Can't you recall?

A. I don't know. I went in and turned in the tickets and got the money. I went in and turned in the tickets and got the cash, and bought a ticket on the "Northern Pacific," I think I told them I couldn't go, but I don't remember what took place; I remember going in, that's about all. I remember getting the money.

Q. You have no recollection of making any explanation about it?

A. I don't think I made any. [109]

Q. On what deck was this shower-room, Mr. Hutchins?

A. C deck; the same deck that my room was on.

Q. Prior to going into the shower-room where this accident occurred, did you take any shower on the trip? A. Never had; no.

Q. When you went into the shower-room, meaning now the room in which the shower compartments were, was the bath steward there? A. Yes.

(Testimony of Clinton J. Hutchins.)

Q. And did he assist in any way in the matter of turning on the water?

A. He turned the water on; the water was running.

Q. And was standing how near to you when he did that?

A. Well, I sat down and he went and turned the water on, and went out.

Q. So that he had left the room by the time you approached the shower compartment—

A. Yes, he was not there.

Q. —and the water was already running?

A. Yes.

Q. You put your hands or arms in to test the temperature of the water before stepping in?

A. Yes.

Q. Did you attempt to manipulate the faucet in any way to change the temperature of the water?

A. I did not.

Q. Had you gotten into the water falling from the shower before you slipped?

A. Just in it, just going under it. The water was splashing on to me, just as I got in, I got almost under it, part [110] way under it, at least, when my feet flew out. I wasn't wholly under the water at the time.

Q. And as far as your head was concerned, that was on the outside of the falling water?

A. Yes, it was not in the water.

Q. What volume of water was coming through—a pretty good flow? A. Yes, a good stream.

Q. And diffused by the spray pretty well?

(Testimony of Clinton J. Hutchins.)

A. Yes, that is, it was coming straight down; it was not shooting out.

Q. But in a fine spray?

A. No, heavy streams.

Q. Heavy streams, and was it cold or warm?

A. Cold.

Q. No steam or anything coming from the shower?

A. No, it was cold water, that is, it wasn't heated water at all.

Q. On what foot was your weight resting more than the other, if either, when you slipped?

A. If heavier on any it was on the right.

Q. More on the right?

A. More on the right than on the left. I pulled my left, it was over, and just as I got it down they flew from under me.

Q. You had not really then set your weight back on the left foot before you slipped?

A. I think they were so close there was scarcely any difference, if any.

Q. Practically even?

A. Practically even, yes.

Q. Did you notice any motion of the vessel at all as you [111] stepped in? A. None.

Q. Would you say there was none?

A. I should say there was practically none. The morning was a calm morning. There was scarcely a movement of the boat any more than on a very calm day, calm morning. It was not perceptible.

Q. Was your body entirely within the shower compartment?

(Testimony of Clinton J. Hutchins.)

Mr. DAVIS.—I submit that is asked and answered; he told him no, that he was getting in.

The COURT.—Objection overruled.

Mr. DAVIS.—To which ruling we most respectfully except, and assign the same as error.

Mr. WARREN.—Answer the question, please.

A. I couldn't say whether a chalk line would have caught me with any protuberance in the back. I was all in, all in both ways when I fell.

Q. What do you mean by a protuberance in the back?

A. Hardly admissible as evidence, I think. I was in the shower-bath; I had just stepped in and down I went. It was almost instantaneous.

Q. So that you were not in a position to have used either marble slab on either side to support yourself to prevent falling downwards as far as the marble slabs are concerned?

A. I don't see how the marble slabs could support me. My feet went one way and the marble slabs were there, and I went out where there were no slabs.

Q. You failed to see any opportunity to catch yourself by catching the slabs?

A. Not that kind of a slab. If it was a slab that I could [112] have caught hold of something to sustain myself I could possibly have, but there was nothing to hold on to.

Q. You preserved your balance entirely to your own satisfaction up to the instant of slipping?

A. Well, it was only an instant, believe me, Mr. Warren.

(Testimony of Clinton J. Hutchins.)

Q. Up to that instant?

A. Up to that instant, yes, one foot behind me until I pulled it over, and it was almost instantaneous. When I brought the other foot over and put any weight on it both feet went from under me, I didn't slip; I just went straight out as if I was stepping on ice, just flew out from under me. I came down with a perfect crash.

Q. Occupying about what length of time?

A. I didn't have a split second watch with me just at that time.

Q. In standing in the shower-room just before you slipped, were you facing any more to the right than to the left?

A. I didn't understand the question.

Q. With respect to the back wall of the compartment, were you facing practically squarely to the back of the shower compartment?

A. Why, I was practically facing straight back. It is possible that I was leaning slightly to the left, but very slightly.

Q. Did you at any time on that occasion pay any attention to the water-pipes on the wall?

A. No, I did not.

Q. Are you able to state positively that those pipes are tight against the marble slab?

A. Well, that is my impression of it. [113]

Q. You cannot state positively?

A. I think they are absolutely tight against it.

Q. In any event, you are positive that they are so close to the wall, if not tight, that you could not put

(Testimony of Clinton J. Hutchins.)

your fingers behind them and get a hold?

A. That is my impression. I did not put my fingers in to see, but that was my impression that they were so close they couldn't be taken hold of.

Q. You have inspected that two or three times?

A. I have, yes.

Q. And have not noticed that?

A. As I say, the notice I took of it, that was my impression, the impression conveyed to me, to my mind, that they could not have been taken hold of.

Q. If that as definite as you can make that answer?

A. That is as definite as I can make it.

Q. So, as a matter of fact, if those pipes are far enough apart for a man to take hold of and put his fingers behind, you didn't know it?

A. Well, I am speaking simply from my view of it, from what I saw. I saw it three times and I don't think a man could possibly get his hands behind.

Q. What was your object in going into the shower three times after the accident?

A. The first time I went in was while on the ship; that was out of curiosity. The next time was because I had complained to Mr. Stone, the chief agent of the company, who was in port, that he was maintaining a death-trap, and when the ship came back again I went in to see whether it had been changed or not, and when I went the third time I also [114] went for that purpose.

Q. You went there to examine the shower compartments? A. Yes, sir.

Q. And as I understand your testimony there was

(Testimony of Clinton J. Hutchins.)

nothing inside of the three walls of the shower compartment except these pipes? A. That is all.

Q. And you don't know enough to state positively how they are fixed?

A. Well, I have stated as positively as I can, right against the marble.

Q. Then, now, you state that positively?

A. I had intended to state it positively; yes.

Q. And you also state positively that there was nothing else inside of there in the way of a handle anywhere? A. There was nothing.

Q. Up to that third inspection, Mr. Hutchins?

A. Up to that third inspection.

Q. Do you know when the other man came into the room? You spoke of another man being in there.

A. He came in just before I got up to take my bath, just as I was taking my clothes off.

Q. And do you know where he stood in the room, or sat?

A. Oh, he was sitting down on a stool right opposite me when I got up to take my bath.

Q. He was where he could see you until you got inside of the compartment?

A. Why, I don't know positively whether I got entirely out of sight of him, but from where he was sitting I couldn't tell you whether he could see any portion of me or not, not [115] very much.

Q. How wide is the space between the two compartments on the floor?

A. I should say it was two foot six or so, two something over two feet.

(Testimony of Clinton J. Hutchins.)

Q. How long after you had fallen before you were first aware that he was assisting you?

A. Well, my impression was, my feeling was, he would come to me immediately, and I was surprised that he did not.

Q. Surprised that he did not?

A. Yes. I am not certain that I called him, but I was about to call him to help me. I think I did call him to help me before he came, and he put his arm under my neck and caught hold of my right arm to help me up, and got his arm under my body somewhere, and I put out my right arm to take hold of the handle of the door in the wall between these two compartments. It was low down and I reached up, when he lifted me up I reached up and got hold of it.

Q. You are certain that you did not lose consciousness at any time? A. Oh, absolutely not.

Q. With his assistance you regained your feet?

A. Yes.

Q. And he assisted you to walk to the stool?

A. Yes.

Q. And there you sat? A. Yes.

Q. While he summoned the deck steward?

A. He summoned the steward and then sent for the doctor, and the doctor came up.

Q. How long was it before the doctor arrived? [116]

A. Oh, it was only a few moments.

Q. A matter of a few minutes? A. Yes.

Q. How long have you known Dr. Macadory?

A. I first met him here while he was in the army;

(Testimony of Clinton J. Hutchins.)

possibly 1901 or '2, I guess it was.

Q. That was in Honolulu, Mr. Hutchins?

A. Yes.

The COURT.—It is now four o'clock; that is late enough to work.

Mr. DAVIS.—Sure it is.

The COURT.—We will suspend until to-morrow morning at nine o'clock, if that is agreeable. Adjourn court until to-morrow morning at nine o'clock. [117]

In the United States District Court, in and for the Territory of Hawaii.

AD. 147.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," etc.,

Libellees.

Honolulu, H. T., Saturday, February 17, 1917, 9:00 A. M.

Mr. WARREN.—If your Honor please, we are willing that Mr. Hutchins be withdrawn from the stand, so that Doctor Wood can take the stand and be excused.

The COURT.—Very well; proceed.

Testimony of Dr. C. B. Wood, for Libelant.

Direct examination of Dr. C. B. WOOD, for libellant, sworn.

Mr. DAVIS.—Q. Your name, Doctor?

A. Clifford B. Wood.

Q. Doctor Wood, are you a doctor of medicine holding a diploma [118] and licensed to practice medicine and surgery in the Territory of Hawaii?

A. I am.

Q. For how long have you—

Mr. WARREN.—I am perfectly willing to admit the qualifications of Doctor Wood.

Mr. DAVIS.—All right.

Q. Now, do you know the libellant in this suit, Mr. Clinton J. Hutchins? A. Yes.

Q. For how long have you known Mr. Hutchins?

A. A good many years. I couldn't tell you how many; more than ten.

Q. Now, in February of 1916, did he visit your office for the purpose of getting medical,—professional—did he visit you professionally?

A. Yes, my books which I looked up, state February 21, 1916.

Q. Did you make an examination of Mr. Hutchins, Doctor Wood? A. Yes.

Q. Will you, in your own language, please state what you found to be the trouble.

A. I found a disability of his left arm at the shoulder joint. He was unable to move it very much himself, and he wouldn't allow anybody else to move it very much because it was painful. I suspected, of

(Testimony of Dr. C. B. Wood.)

course, a fracture, from his condition and advised the taking of an X-ray *plant,* and the X-ray plate shows a fracture in the left shoulder joint, the humerus parenti—

Q. Doctor, did it take you long to come to the conclusion that there was a fracture there? [119]

A. Well, I didn't make any positive diagnosis until I saw the X-ray plate, but the symptoms were symptoms of fracture.

Q. Exactly, plainly visible to you?

A. Not so plainly visible, but plainly demonstrable. The fracture did not show any great amount of deformity. It belongs to the class that we call impacted fractures. There was no great misplacement of the bones or any particular deformity over the shoulder, but in moving his arm, which I did as well as I was able to, I did not note the slipping and grating sounds which we want when there is a displaced fracture, but these signs are all absent in what is called an impacted fracture, which his proved to be.

Q. Did you notice any discoloration on his body?

A. His whole shoulder was discolored, and away down on his chest and over his back a *dar* coloring under the skin. It was there a long time.

Q. Was this a serious fracture, Doctor, in your opinion?

A. Any fracture around a large joint is a serious fracture.

Q. Then you treated Mr. Hutchins?

A. I treated him until the latter part of March.

Q. What did you do, Doctor, the first thing after

(Testimony of Dr. C. B. Wood.)

you ascertained that this was a fracture?

A. I immobilized his arm, put it close up against him in this position and kept it there several weeks.

Q. By means of what? A. Bandages.

Q. Can you say as to whether or not Mr. Hutchins was suffering pain at that particular time?

A. He apparently was suffering a great deal of pain. [120]

Q. And how long did that continue, Doctor Wood, in your opinion?

A. Well, the pain continued as long as I treated him, when the shoulder was moved.

Q. From your examination in the first instance, did you have any trouble in believing that there was more than a bruise there?

A. I was satisfied at the first visit that it was something more than a bruise.

Q. From that first examination? A. Yes.

Q. Well, could any medical man with an ordinary knowledge of surgery be misled as to these symptoms, would he look for a fracture?

A. Well, I couldn't answer for any other medical man, I don't know.

Q. Well, you did, anyhow? A. I did, yes.

Q. You suspected a fracture right away?

A. I suspected a fracture as soon as I manipulated the shoulder.

Q. How long after the examination of his shoulder did you suspect a fracture?

A. Well, I presume the first examination took me ten minutes, ten or fifteen minutes, and I was very

(Testimony of Dr. C. B. Wood.)

well satisfied in my own mind that there was a fracture there some place.

Q. Did you notice any other wounds on the body of Mr. Hutchins during the time you examined him?

A. I don't recollect any now, with the exception of the shoulder joint.

Q. Was Mr. Hutchins—how is his physical condition? A. About as usual, I think.

Q. How long did it take before Mr. Hutchins was what we call— [121] what you would call even cured, relieved, so that he could use his arm for ordinary purposes?

A. Well, he went away, I didn't see him when he could use his arm for ordinary purposes. The last visit I have on my books as some time the latter part of March, I am not sure, about the 28th of March, and certainly at that time he was not using the arm for ordinary purposes.

The COURT.—He was not?

A. He was not.

Mr. DAVIS.—What was the effect of that fracture upon his arm and shoulder as compared with his right arm, as to length and so forth?

A. There must have been some shortening there in the bone, evidently, from the X-ray picture, because the shaft of the bone was pushed into the head of the bone, not to a great extent but to some extent. The head of the bone—the heads of all bones is composed of much softer bone than the shaft and is called cancellous tissue, and that means a spongey softer tissue, the ends of all long bones, and this here

(Testimony of Dr. C. B. Wood.)

shaft was pushed into the softer end of the bone, a sort of a cap over it, and being pushed into it necessitated some shortening of the length of that arm bone.

Q. As to whether that injury would affect Mr. Hutchins permanently or not, what would you say, in your opinion? What condition would it leave the arm and shoulder in, that is a better and plainer way of putting it.

A. At that time it was a difficult question to answer. At the time of the fracture if you would ask me that question, which he practically did, it would have been a difficult question to answer because there is always some uncertainty [122] about any fracture, and always more uncertainty about a fracture connected with a joint, close to a joint and including the joint. We don't know how large the joint surfaces are usually, don't know what the results of an injury to joint surfaces may be to the cartilages. Since he returned this time, a day or two ago, I examined the shoulder and found very little permanent injury. In putting his arm behind him this way it won't go quite as far as it ought to because of the pain, if you try to push it to a great extent, and by raising it over his head the same thing results, although you can get it pretty well up.

Q. Now, Doctor, did you render him any account for medical services?

A. I sent him a bill for $100.00, which he paid.

Q. Did Doctor Straub have anything to do with the treatment of Mr. Hutchins,—I mean in the examination of Mr. Hutchins?

(Testimony of Dr. C. B. Wood.)

A. Not to my personal knowledge.

Q. Just with reference to the X-ray?

A. As far as my personal knowledge goes.

Q. Doctor Hobdy, did you consult with Doctor Hobdy in the matter at all, Doctor Wood?

A. I asked Mr. Hutchins to have another plate taken because I thought we might be able to get a better one than Doctor Straub's plate, and I advised him to go to Doctor Hobdy and let him take another one, which he did. I saw the plate in Doctor Hobdy's office together with Doctor Hobdy. I think he took two plates, and I saw them both, and compared them together with Doctor Hobdy and talked [123] the matter over with him some at that time.

Q. In the bandaging of this shoulder, Doctor Wood, it has got to be done in a certain way, hasn't it? Will you just state to the Court because we have to get it from you. Will you state just what you did in the way of bandaging the patient's arm and shoulder.

A. I stripped him to the waist and then brought his arm up in this position and fastened it there with bandages and adhesive straps. I changed that because he is a heavy man and perspires very freely, and I changed it. In two days I removed all the bandages and washed his skin thoroughly with soap and water and then with alcohol and then powdered him and replaced my bandages. I think I did that every two days for a considerable length of time, several weeks.

Mr. DAVIS.—You may take the witness. [124]

(Testimony of Dr. C. B. Wood.)

Cross-examination of Dr. C. B. WOOD.

Mr. WARREN.—As I understand you, Doctor, on your first examination of Mr. Hutchins you spoke of a fracture, but were not able to determine just what it was.

A. Yes.

Q. Oh, I wanted to ask you, what time did Mr. Hutchins come to see you?

A. My belief is that he came in the morning of the 21st, although I cannot answer that positively because I am not sure. I did not make any note of it. I might be able to tell positively by looking up my personal notes on that day, that is, judging where his visit occurred with other visits later on in the day, but my belief is that he came in the morning from the steamer soon after the "Great Northern" came in. He told me that the injury occurred on the "Great Northern" and he came to my office on Beretania street for the first examination and for all subsequent examinations.

Q. To what extent did you manipulate his arm and shoulder on the first examination?

A. Well, I manipulated it to a great extent as he would permit me on account of the pain. I brought it forward in this position and I brought it back in this position as far as I could, took it away from his side as far as he would allow me and attempted to rotate it this way, that is, rotating the bone in this socket. All of these motions were painful, they all made him cringe. The [125] involuntary contractions of his muscles, involuntary to the extent

(Testimony of Dr. C. B. Wood.)

that he did it to escape pain, of course, made a thorough examination at that time difficult but I managed to get over it enough to satisfy myself that there was something the matter with his shoulder joint and was trying to get the characteristic—the specific term is crepitus. Crepitus means rubbing the broken ends of bones together, and I was trying to get some such crepitus so that I would be absolutely sure it was a fracture. On account of this being an impacted fracture without any slipping and on account of the limited amount of motion I was able to put the shoulder through I failed to get any crepitus and also from the failure to make extensive movements of his shoulder joint on account of the pain.

Q. From the appearance of the arm and shoulder and its apparently sore condition at that time, would you entertain the opinion that when the accident occurred there must have been a great deal of pain at that time immediately following the injury?

A. I think there must have been pain at the time of the injury, because a fracture in a joint is always a painful thing. With the joint at absolute rest and the person reclining there might not be pain, but any movement, even of his body which would necessitate the use of the muscles around there, or raising the body, would move these fractured surfaces and would bring a strain, and even if the surfaces did not move it would bring a strain on the fracture and would cause pain.

Q. How in your opinion would that in an ordinary

(Testimony of Dr. C. B. Wood.)

case compare [126] with the pain, say, two days later, as when you two or three days later examined the member, greater or less,—or let me put my question in another way. Would the manipulation of the injured part be more painful at the time of the injury than later?

A. Manipulation somewhat depends on the time after the fracture, whether it is a serious fracture or a wound with the tearing of the tissues immediately. For a few minutes after the injury there may not be very much pain. There is a numb, dull, helpless feeling there, but the acute sharp pains do not follow immediately after the injury. That follows some time later, that is, the nerves are injured, the nerves have been blunted, mechanically injured and they are not capable of carrying the impression of pain to the brain. But it is only a matter of a short time, a matter of minutes, or anyway, less than sixty minutes after that the pain starts, nearly always at first a sharp tearing pain that keeps on for a while until the nerves get tired out and tired of carrying the impression of pain and settle down. Then the pains might be not so very great with a person who is absolutely quiet, but movement causes pain because it wrenches these sensitive nerves again. Now, a man going to a doctor's office like he did and having the joint manipulated would suffer more pain at the beginning of the manipulation than he would have if he went on later. The first movements would cause these nerves to cringe and would cause pain. Continued manipulation limbers the muscles up a

(Testimony of Dr. C. B. Wood.)

little bit, and the nerves would stop crying out so imperatively on account of the [127] pain, and later manipulation would be able to make greater manipulation and they could be made with less pain. Allowing some hours to intervene, perhaps a day, and the patient on returning to your office and beginning the same manipulations again, the same thing would occur. In beginning the manipulation the pain would be greater than if we worked the arm a little while.

Q. If you might say practicable purposes is there any substantial difference in the pain, given a person by manipulation say within an hour after the accident, or thirty minutes, and a day or so later?

A. There might be more pain at a later time because not only the nerves have been injured but the tissues around have been injured. The constant result of any injury to the tissues is to cause an increased—the first thing it does is to cause an increased flow of blood to that part, there is an increased flow of blood and there is a certain amount of diffusion of the fluids. Then inflammation might result. If it does not go on to the extent of inflammation but a step short of actual inflammation there would be a congestion there and a stretching of the tissues, and there would be increased pain later on from the manipulation, more than there would be at the very beginning.

Q. Substantially more?

A. If inflammation sets in then very substantially more.

(Testimony of Dr. C. B. Wood.)

Q. Now, in this case on the first examination, you say you did not get any definite signs of fracture?

A. No, I did not say that. I said I did not get perhaps [128] the definite physical signs of fracture, I did not get the cardinal signs of fracture which are deformity and crepitus.

Q. You felt it was advisable and necessary to have an X-ray plate taken in order that you could get a physical inspection, say, to inspect the bonds themselves?

A. I thought it was very advisable indeed to be absolutely sure of my diagnosis.

Q. You did not feel altogether satisfied with the one that had been made by Doctor Straub?

A. No, it is not what we call a very good plate. I thought a better plate could be made.

Q. Was that on account of the direction or point of view of the plate, or because it had been poorly developed or was defective?

A. It is an advantage always to have two plates taken from different points of view around the fractures, they are very deceptive. You get one for the front and one behind the fracture. If it is only one, it shows some portion of the fracture and some other portion may be absolutely not shown at all. You want to get angles, and I wanted more than one plate taken from different angles. Another reason was that there are usually failures in proper exposure in making a plate, or in defective development, or an inferior machine, and when I say inferior machine I do not mean a bad machine but I mean one

(Testimony of Dr. C. B. Wood.)

that is inferior to the best. I was not satisfied with that plate and I knew that Doctor Hobdy had just installed the very latest type of machine and that he was doing excellent work with it. I had seen plates of his that were far better plates [129] than the one which Doctor Straub had taken and I wanted to have him try his machine on this particular case and get pictures from two different angles.

Q. When was the plate taken by Doctor Straub, do you know?

A. Why, it is dated there, I don't know, but I think on the day of the injury, the 21st of February.

Q. That date was February 21st?

A. The same day that he consulted me.

Q. And when did you receive that plate?

A. I could not state that positively, but to the best of my recollection I rung up Doctor Straub and asked him about it and he offered to send it over to me and did send it over to me. The reason that I have any recollection of it is that it might be important to introduce the plate in evidence later on and that it would be well for me to have the plate in my possession, that is, not to allow it to pass through any other hands except Doctor Straub's and my own. I know that I had that impression regarding the plate.

Q. When did you get it, is the question.

A. I got it within a day or two, I cannot answer that positively because I made no note of it.

Q. It might even be as much as two days before you saw the plate for the first time?

(Testimony of Dr. C. B. Wood.)

A. It is possible, because I do not remember.

Q. When you had received that plate how long after that was it before you advised Mr. Hutchins to have another taken by Doctor Hobdy?

A. My impression is that I advised him right away. [130]

Q. And when did you after that see the plates that had been taken by Doctor Hobdy, or any plate?

A. I saw the plates, I should say, thirty-six hours later, within thirty-six hours. My impression is in a lesser time from the time that Doctor Hobdy took the plates because I remember perfectly being quite interested in it and I went to see the plates, went to his office for that purpose, and I certainly did not allow very much time to elapse, although I cannot tell you exactly.

Q. In immobilizing the arm as you have stated, that consisted in tying it up in the most comfortable position and preventing it being moved?

A. Yes, the main object was to prevent its being moved. It is a place where splints are not very applicable, over a shoulder joint. It is almost impossible, it is impossible to satisfactorily apply splints, you can't make the splints fit in such a position that they will do the work you are trying to accomplish. You can do a great deal more by immobilizing the arm itself. It can be done with bandages and plaster of paris cases. I considered both methods and considered it was sufficient to put it up snugly in bandages and keep my eye on the bandages rather than fasten him up in a big stiff plaster of paris cast.

(Testimony of Dr. C. B. Wood.)

Q. The shoulder did not require then what you would call setting, it was not out of position?

A. No.

Q. And you say there was no outer indication except the discoloration and some swelling to indicate that there was anything wrong? [131]

A. That is as far as eyesight is concerned, you mean?

Q. Taking that kind of an injury immediately after its occurrence before there could be any discoloration or inflammation, would you say that a doctor of ordinary experience would be making a serious mistake if he did not diagnose it as a fracture? A. That is a hard question to answer.

Q. You would not be prepared to say—

A. I think the circumstances would have to come in. I could not answer that question.

Q. Considering that an accident of that kind occurred at sea, and two or three days, between two and three days of the voyage remaining, what in your opinion would have been the best thing to have done for Mr. Hutchins under the circumstances until he got ashore?

A. If he were injured two or three days before landing and went to a physician, any physician for examination and diagnosis and treatment, it seems to me that during these two or three days provided that the physician was given an opportunity to see the joint, to see the shoulder after his first examination he should discover that there was something more than a bruise, an external injury, and discover-

(Testimony of Dr. C. B. Wood.)

ing that should make the best effort possible to find how extensive that injury was. He should certainly have a suspicion that the joint was injured if he was in the condition that he came to my office, and finding the probabilities that the joint was injured and that there was something inside which he could not see, something that was more than evident than was on the outside, I should say it was his duty to treat the arm by immobilizing it. [132]

Q. You say that at the first examination you consider that it would not necessarily follow that he should diagnose it as a fracture, on the first examination?

A. No, I think it would not be necessary. In my opinion, knowing nothing of what did occur, I know absolutely nothing of what occurred, my opinion would be this: that if the patient called on the doctor and reported the accident or injury to his shoulder the doctor might conclude that it was painful from being bruised, and if the passenger went about his business and never went near the doctor again he might think that was the end of it, but certainly if the passenger went to him later on and complained of the shoulder still paining him, if he acted anything like he acted when he came to my office having absolute nonuse of that arm and holding it up by the help of his free hand and cringing away whenever we attempted to move the shoulder joint, if these symptoms were present in any subsequent visit to the doctor, I think the doctor should have made a thor-

(Testimony of Dr. C. B. Wood.)

ough investigation and tried to find the extent of the injury.

Q. But in the event that the patient after the first examination was around and about the vessel within an hour and did not thereafter consult the physician, what would then be your opinion?

Mr. DAVIS.—Those are not the facts in this case, your Honor. Mr. Hutchins says the doctor gave him these two pellets and went away, and came around the next morning and didn't do anything.

The COURT.—I will admit the proof. Go ahead. [133]

Mr. DAVIS.—No foundation—

The COURT.—Go ahead and answer the question, Doctor.

Mr. DAVIS.—To which ruling we respectfully except and assign the same as error, and on the ground that it is assuming something that has not happened and that there is no evidence of it, no foundation laid.

The COURT.—All right.

A. I should say that if the patient failed to further consult the doctor, if you speak about his being around on deck, if he were around on deck in the normal way mingling with other passengers and taking part in things which were going on on deck, going to the table for his meals and using both hands in a normal way and the doctor observed this, I should say he is not to be blamed without further consultation for anything which may have turned out to be more serious than he thought at his first ex-

(Testimony of Dr. C. B. Wood.)

amination, that is about my opinion.

Mr. WARREN.—That is all; thank you, Doctor. [134]

Redirect Examination of Dr. C. B. WOOD.

Mr. DAVIS.—And if he was going around the deck with his arm this way all the time and the doctor observed it, wouldn't it be his duty to make a further examination? A. Yes.

Q. Now, then, Doctor Wood, on your first diagnosis you had no doubt in your own mind but what there was a fracture there?

A. I did not state that, Mr. Davis, I stated—

Q. But did you believe there was?

A. I believed there was.

Q. Yes, and the symptoms of that were not only absolutely demonstrable, but to your own mind led you to believe there must be a fracture?

A. I believed there was a fracture, and I stated to Mr. Hutchins at the time that there was probably an impacted fracture. I could distinctly remember that.

Q. Assuming then that these are the facts, that the doctor visited him within a few minutes after the accident and went in the stateroom and made an examination and did nothing more than to give him two pellets and go out, and the next morning came back and made no further examination do you think that he—and came back the second time and made an examination, don't you think that he would be able to discover that there was something more than a bruise the second day?

(Testimony of Dr. C. B. Wood.)

A. When you say the second time you mean after what interval?

Q. Twenty-four hours. [135]

A. In my opinion he would.

Q. Yes, and now, Doctor, do you think—I want you to bring out clearly without leading you, I want the condition as to permanent—will this injury affect Mr. Hutchins for any length of time from now on?

Mr. WARREN.—I would like to object to that question, your Honor, as not being proper redirect examination, and moreover already covered by direct.

Mr. DAVIS.—I don't think it has.

Mr. WARREN.—And not touched upon in cross.

The COURT.—Possibly it may not be redirect examination, but I overrule the objection and will allow the question to be answered.

Mr. DAVIS.—I will ask your Honor to permit me to ask the direct question which I omitted in direct examination.

The COURT.—All right.

Mr. DAVIS.—Well, go ahead, Doctor, with that one.

A. Judging by the effects which I know of the nature of the injury, my knowledge being based on his condition when he came to my office and my observation of the X-ray plates which were identical and taken in connection with a recent examination after a lapse of nearly a year, my opinion is that there would be no serious permanent injury—no serious permanent result, that there may be some

(Testimony of Dr. C. B. Wood.)

slight permanent result in the limitation of all the motions of the joint and perhaps twinges of pain in making extreme motions of the joint for some considerable time longer, I think is evident enough, but the joint can be moved fairly freely. I don't know how much personal use he has of the arm, I don't know how much he has tested it [136] regarding strength, the strength of the muscles without pain, I have not questioned him on that point, but after the present lapse of time the evident noninjury to the important nerves which would have been manifest after this lapse of time by the acrity of the muscles which has not occurred, my opinion is that there has been no serious permanent impairment of the joint.

Q. Doctor, do you think that the effect,—that the fact that this injury happened on the 18th and that no bandaging of that arm or other methods were adopted until the vessel arrived here on the 21st, what effect would that have on the arm, with nothing done at all towards it?

A. It would have the effect of having unnecessarily submitted the patient to pain.

Q. What would have been the result if it had not been bandaged up?

Mr. WARREN.—That is supposition.

Mr. DAVIS.—What was the effect of not doing anything towards bandaging it from the 18th down to the time he came to you?

Mr. WARREN.—That has been asked and answered, your Honor, the answer was that it would

(Testimony of Dr. C. B. Wood.)

probably subject him to unnecessary pain.

Mr. DAVIS.—And what else?

A. You mean what was the actual effect?

Q. What might have been the result?

A. Well, might have been, that is a different question.

Mr. WARREN.—I object to that as speculative. [137]

Mr. DAVIS.—Well, what could have been; that's the idea.

A. I will state to the Court that that is a very essentially different question. It brings up something entirely different.

The COURT.—It is immaterial what could have been, Mr. Davis.

Mr. DAVIS.—Then that is all that did happen, was pain? A. In my judgment, yes.

Mr. DAVIS.—That is all.

Recross-examination of Dr. C. B. WOOD.

Mr. WARREN.—I want to ask, Doctor, if from your examination of the injury you could determine the manner in which that injury had been sustained; in other words, how the patient had fallen?

A. To some extent.

Q. How he struck, I mean.

A. I can, to some extent. I have been speaking right along of an impacted fracture, that is perfectly true, a portion of the fracture was impacted as I have described. There was something further to the fracture than that, not only the impaction, but there was the loosening of a certain portion of the

(Testimony of Dr. C. B. Wood.)

bone itself, a distinct fracture in which one portion of the bone was separated from another portion and not impacted. It happened to be on the outer corner, it was the edge of this corner—the edge of [138] this shoulder of the arm bone where it comes up into the shoulder joint, and actually fractured off a piece of bone about as long as that—now, I have lost the drift of your question.

Q. The question was, how he had fallen.

A. Oh, yes, taking into consideration that the fracturing off of a piece on the outside of the bone and considering the fact that the shaft was pushed into the head of the bone, I should say that the arm must have been to some extent away from his side, and that the blow must have been received down here or on this part of the arm so as to drive the shaft towards the shoulder.

Q. That is, in your opinion the arm could not have been straight out—

A. Well, I base my opinion on both injuries. It is absolutely essential that the bone must have been driven,— that the whole length of bone must have been driven towards the shoulder, otherwise the impacted fracture would not have occurred. Now, the fact that this piece was fractured off leads me to believe that the arm was at some distance any way away from the side when the blow was received because, had it been close here I don't believe that piece would have been fractured off, and had it been clear out in an extended position I don't think that piece would have been fractured off.

(Testimony of Dr. C. B. Wood.)

Q. So that the patient having lost his balance and putting his arm out straight in an endeavor to catch himself in falling, do you think the fracture or breaking would not have occurred? [139]

A. I think not if he fell on his hand. If he fell on his elbow, it might.

Q. Could you then draw any conclusion from the general appearance of the injury to determine whether that fall was sudden, say, too sudden to enable any opportunity to put out an arm to catch himself?

Mr. DAVIS.—Now, I object to that, your Honor.

Mr. WARREN.—Withdraw the question.

Q. Could you determine, Doctor, whether or not on that fall the patient had fallen more directly sideways or toward the back or front?

Mr. DAVIS.—I object, your Honor; I think the doctor has made a sufficient statement from his examination as to the proper position of the arm. He said if he fell on his elbow he might have had his hand out reaching for something, and if he fell on his hand it was different.

The COURT.—Read the question, Mr. Reporter.

Last question read by the reporter.

The COURT.—Answer the question, Doctor.

A. I should say more sidewise.

Mr. WARREN.—And if any way other than sideways would it have been more to the front than to the back?

A. I don't think it is possible for anybody to answer that question, because the arm is a movable

(Testimony of Dr. C. B. Wood.)

thing at the shoulder. A man can fall in a forward position and throw an arm back and land on his elbow, for instance with the full force direct to the shoulder, or he may fall forward and throw his arm forward and land on his elbow and still apply the force directly toward the shoulder, or he could [140] fall sidewise the left arm from the side and still apply the force directly toward the shoulder. I think it is impossible to answer that.

Q. But wouldn't the shoulder joint show whether the impact had been direct from the side or had been more from the back or from the front, an impacted defect to show the direction or indicate the direction?

A. A hard question to answer. I don't think so. Not when the injury is entirely to the humerus, it is when the socket is not involved.

Redirect Examination of Dr. C. B. WOOD.

Mr. DAVIS.—The nature of this injury could in no way, Doctor, enable you to tell what Mr. Hutchins was doing with his right hand at the time he fell, immediately preceding?

A. No, nor his right foot. I don't see the connection.

Q. Is that the plate brought to you by Mr. Hutchins or sent to you by Doctor Straub?

A. My recollection is, I am not going to state this positively even if it is necessary to identify the plate, but to the best of my belief this is the plate which Doctor Straub sent to my office and that I have kept in my office ever since.

(Testimony of Dr. C. B. Wood.)

Q. Ever since, all right. [141]

Mr. DAVIS.—I will now ask that this be marked for identification, and when Doctor Straub comes I am going to put it in evidence. That is all, Doctor Wood.

The COURT.—I wish to ask the doctor a question. Doctor, if I understand you, this is what you call an impacted fracture? A. Yes.

Q. Caused by the bone being shoved up into the joint? A. Yes.

Q. The hard portion of the bone being shoved into the soft portion? A. Yes.

Q. Well, you say the symptoms indicated that before you got the X-ray?

A. They indicated it because the symptoms were a serious injury to the joint which meant a probable fracture, and in the absence of deformity and a crepitus my opinion then was that it was an impacted fracture. That is the difference. And having made up my mind that it was an impacted fracture and having formed the judgment that it was fractured, and then failing to get a crepitus, or displacement or bone deformity I judged it was impacted because these things were absent.

Q. Well, of course without the X-ray you determined from the symptoms that there was a fracture before you saw the X-ray? A. Yes.

Q. Of course, before the X-ray pictures were taken that was all that doctors had to go by. All right, now I will [142] ask you, should a competent physician knowing, or hearing from a patient how

(Testimony of Dr. C. B. Wood.)

the injury had occured, knowing how the injury had been sustained, observing the symptoms, and knowing the history of the case as I believe you physicians call it, should a competent physician have known that there was probably an impacted fracture at the time he first examined him immediately after the injury was sustained?

A. I think he should have suspected it, and suspecting it should have taken all the means he considered necessary and best to prevent motion of that joint.

Q. I understand you then to say he should have suspected an impacted fracture from the symptoms, a competent physician knowing the history of the case and knowing how the injury had occurred?

A. He should have suspected—

Q. From the symptoms?

A. He should have suspected, strongly suspected an injury to the joint, and a careful examination with present findings and barring out other things should have led to the opinion just as it did lead to the opinion in my own case, that there was an impacted fracture there.

Q. Now, the treatment for an impacted fracture is what you gave, is it? A. Yes.

Q. A fixing of the arm so as to take away—so that it cannot move, is that what you call it, what is it?

A. Immobolization.

Q. Immobolization of the arm. Is there any in that treatment [143] that would have been improper to the treatment of a bruise?

(Testimony of Dr. C. B. Wood.)

A. No, nor a sprain.

Q. The immobolization of the arm would have been just as proper for the treatment of a bruise or a sprain as it would also for an impacted fracture, is that correct? A. Yes, that is correct.

Q. So, if I understand you, a competent physician should have strongly suspected that there was an impacted fracture on his first examination and should have treated him for that, should have treated him for an impacted fracture?

A. He should have treated it for a probably injury to the shoulder joint.

Q. Yes, he should have treated it for an injury to the shoulder joint. A. Yes.

Q. Well, from the symptoms that must have been visible should a competent physician have immobolized the arm first that morning?

A. By visible, you mean actually visible to the eye?

Q. I am talking about the injury, you understand what the nature of the injury was? A. Yes.

Q. Then as a physician, you understand what the symptoms must have shown immediately after the injury was sustained? A. Yes.

Q. Well, now, we will suppose that a competent physician sees these symptoms shortly or very soon after the injury occurs and knows how the injury was sustained. Now, I will ask you how a competent physician should have treated the injury. **[144]**

A. He should have immobilized that shoulder joint.

(Testimony of Dr. C. B. Wood.)

Q. Immobilized the shoulder joint?

A. Yes, sir.

The COURT.—That is all.

Mr. DAVIS.—Stronger reasons would exist for a physician doing that on the second occasion, twenty-four hours after?

A. Yes.

Mr. WARREN.—I wish at this time, your Honor, so that there shall be no misunderstanding about it, give notice that I shall move to strike all testimony as to the competency or incompetency of the physician unless it is going to be followed by proof of the further allegation which has been made that incompetency even if it did exist, existed to the knowledge of the company.

Mr. DAVIS.—We will settle that right here; I just put that in the allegation, that they had knowledge, but that is not necessary. Their duty is to employ a competent physician, and if they don't it is a violation of the contract, knowledge is not necessary.

Mr. WARREN.—I am giving notice now; later I will make the motion.

The COURT.—All right. You are excused, Doctor. The Court will take a recess for five minutes.

AFTER RECESS. [145]

Testimony of Clinton J. Hutchins, in His Own Behalf (Recalled—Cross-examination).

Cross-examination of CLINTON J. HUTCHINS (Continued).

Mr. WARREN.—Regarding the porcelain basin in

(Testimony of Clinton J. Hutchins.)

the shower compartment into which you stepped, you spoke of it as having a slippery surface?

A. Yes.

Q. Can you state whether that porcelain basin is any way different from the ordinary porcelain of the porcelain bath-tub?

A. I don't—it is a glazed surface. I used to be in the plumbing supply business at one time and I am pretty familiar with these things, Mr. Warren, it is what is known as Imperial ware, I think. I examined it carefully and it is the same as is used in bath-tubs and showers in houses, the same material.

Q. The ordinary white porcelain bath-tub?

A. No, you mean the iron tub, it is different from that, and I think much more smooth the surface is. It is perfectly smooth, glazed.

Q. The surfaces of all bath-tubs in ordinary use in houses, in households, porcelain tubs, are glazed in the same way, are they not?

A. I don't know as to the method, but this is more perfect. The glazing of the iron very often will craze a little, and this is more perfect than that.

Q. In falling you say you struck in the opposite shower compartment? A. Yes. [146]

Q. How far in?

A. I couldn't say that. I can only judge from the way my arm flew out from under me, I think I went just over the edge of it.

Q. That is, that your left arm went into the basin of the other compartment?

A. Yes, of the other compartment.

(Testimony of Clinton J. Hutchins.)

Q. Have you a recollection of how you laid there immediately after you fell, whether on your back or side?

A. I was on my side, bridged across between the two, my head in one shower and my feet in the other.

Q. You have spoken of the three marble walls of this compartment as being polished marble. Did that fact contribute in any way to your falling?

A. Not the slightest.

Q. It would not have mattered whether those walls were polished or rough? A. Not the slightest.

Q. You have mentioned two pipes on the left well?

A. Yes.

Q. Are you sure there were not three?

A. I do not think there were three.

Q. What is that?

A. I said I do not think there were three.

Q. If there were three you did not notice them?

A. If there were three I did not notice them.

Q. In your three examinations?

A. In my three examinations. My impressions are there were only two. [147]

Q. In falling did both of your feet fly out simultaneously, or first one and then the other?

A. Practically about the same time. When I felt myself go both feet flew out, there was no stopping till I finally I found that I had struck something. My large toe was black the next morning. My feet went out that way and I caught myself here. The soreness here did not disappear for months.

Q. Did you have any warning whatever of the slip

(Testimony of Clinton J. Hutchins.)

before it occurred? A. Practically none.

Q. You had time only when you realized your feet had flown out to endeavor to turn and strike as safely as you could?

A. I grabbed for anything this way, and threw out this hand and then I went down.

Q. That is, you grabbed out with your right hand?

A. Yes.

Q. That was a spasmodic grab, to grab hold of anything there was to catch hold of?

A. Yes, anything.

Q. You did not have in mind that you were grabbing at any particular thing? A. Nothing at all.

Q. It was practically an involuntary grabbing motion to save yourself? A. That's it.

Q. Which you might have made if you had been in clear air? A. Yes. [148]

Q. Were you feeling the water with one or both arms?

A. Both, rubbing it on my arms this way with my hands.

Q. When the doctor examined you on reaching your room you were sitting on the settee?

A. Well, he took me in, he and the steward; I think the two took me in the room, and the doctor was one of them.

Q. Your room or the doctor's?

A. My room. Our room was right at the end of a little passageway almost directly opposite to the door leading to the shower-bath.

Q. And you then had—you were stripped when he

(Testimony of Clinton J. Hutchins.)

made the first examination?

A. Oh, yes, I was stripped for my bath, and they just put the clothes over me and carried me in.

Q. And how long a time did he occupy in making the first examination?

A. Why, I don't think he took more than about five minutes. I kept complaining, and I told him it was my shoulder, I told my wife that my right shoulder was injured, and I told the doctor; I said, "I think, Doctor, I have broken my shoulder," and after he sat down he moved my arm around a good deal.

Q. He moved it a good deal?

A. Yes, that is, he took it just about the way that Doctor Wood indicated.

Q. And then assisted you to your bunk or berth?

A. To my berth; yes.

Q. And did he give you any advice or instructions?

A. No, he gave me some pellets instead. [149]

Q. Did he give you any advice or instructions?

A. No, I don't think so, not that I remember.

Q. He may have?

A. I think I would remember them if he had.

Q. To your best recollection he gave you none?

A. Yes, to the best of my recollection; yes. Of course, he said it was just a bruise or a sprain, a bad sprain, and would be all right in a few days.

Q. How long did you remain in the berth?

A. My recollection is about half an hour. It was so painful that I couldn't lie there.

Q. The doctor having left you the first time, how long was it before he came back?

(Testimony of Clinton J. Hutchins.)

A. He went out and got these pellets and came back.

Q. How long a time?

A. He was only gone a few minutes, only a few moments; just after they laid me in my berth.

Q. Then having left you that time when did he next return? A. The next morning.

Q. He didn't come back to your stateroom and find you dressing? A. No,—that first morning?

Q. That first morning. A. No.

Q. You are positive?

A. I am positive of that; that is, I didn't see him. If he came I wasn't aware of it.

Q. And then you went out on deck? A. Yes.

Q. And went around the ship?

A. I went up and sat in my chair. I had a chair, and sat down there for a while. [150]

Q. Where did you take your meals?

A. In the dining-room.

Q. Take your lunch there? A. Yes.

Q. All of your meals, in fact? A. Yes.

Q. How late were you up that night with the mock trial, how long did that take?

A. It only took a short time. I felt as though I wanted to stay up all night. I went to my room when my wife wanted to retire,—I retired about the same time, but as soon as I thought she was asleep I got up and sat on the settee. I couldn't get on my back at all. If I got on my right side and have my arm placed in such a position as it would be comfortable as soon as I dozed off it would be very painful and

(Testimony of Clinton J. Hutchins.)

would wake me up immediately, so I couldn't get in any position where it would be comfortable. I got on the settee and would brace myself in the corner and would half doze there and the least roll would wake me up.

Q. Now, you say he came to see you the next day?

A. Yes, the next morning.

Q. And examined you, manipulated your arm?

A. Yes, to some extent. It was very painful and he couldn't do much.

Q. As much as the first time?

A. There was a great deal of rigidity, couldn't move it at all. It was so rigid I could hardly get my undergarments on. I wore short sleeves and couldn't hardly slip that over.

Q. After that on the voyage did you see him occasionally about the ship?

A. I saw him every day. [151]

Q. And was the subject of your injury mentioned between you?

A. Oh, yes; he asked me how I felt and I told him I felt as well as could be expected, I felt fairly well.

Q. Did you ask him to make any further examination?

A. I didn't think it was my business to ask him.

Q. You did not ask him?

A. I did not ask him.

Q. You have stated that when you went ashore at Hilo that you saw no other doctor there.

A. No.

Q. Did you endeavor to find one?

(Testimony of Clinton J. Hutchins.)

A. No, I did not.

Q. What did you do at Hilo at that time?

A. Why, Mr. and Mrs. Eckart, of the Olaa plantation, met us and drove us out to the plantation, and then we came back in the afternoon and I saw some people in Hilo,—Mr. Thurston, particularly.

Q. You went out by automobile? A. Yes.

Q. Do you know whether or not the captain of the ship knew of your accident?

A. I haven't any idea.

Q. Did you report it to him? A. No, sir.

Q. You met him about the deck?

A. I don't know as I did. I only spoke to him once, I think, and when that was I don't know. I didn't get much acquainted with him.

Q. The stewards of the vessel served as often as they were called? A. Yes.

Q. For what you asked of them?

A. Yes; especially the steward at the table was very thoughtful; [152] he cut my meat up for me and helped me all he could.

Q. Just why did you go on board the "Great Northern" on her first return to Honolulu and go into that shower-room, what was your purpose?

A. I had complained about the condition of the shower as it was maintained by the ship, and I was down at the Union Feed Company, and as I went along I went in to see whether any change had been made in the shower of any kind. I recommended to Mr. Stone that they tear out these slippery bowls and put in smooth concrete so that it would hold.

(Testimony of Clinton J. Hutchins.)

Q. Have you ever seen smooth concrete in shower-rooms on board a vessel?

A. No, but I never have seen anything of this kind exactly, but I have always seen in all ocean trips I have made, in shower-baths, either a large railing or a firmly fixed handle to hang on to, or a grating for the shower.

Q. Your second visit to the vessel on her next trip, or the time you made your third inspection, was for the same purpose?

A. The same purpose; yes. I happened to be down at the Union Feed Company also and as I came back I went aboard.

Mr. WARREN.—For the purpose of identification, your Honor, I wish to refer to the three photographic prints which are marked Plaintiff's Exhibits 1, 2 and 3, attached to the deposition of W. A. Scott which are on file, I simply wish to show these to the witness, being photographs of the interior of this bath-room, as I understand it, and ask you to look particularly at Plaintiff's Exhibit 3, and ask you if that appears to you to be a photograph of the shower-room? [153] A. It appears to be; yes.

Q. Now, I call your attention to a handle or grab-iron in the back of that, in the center of the picture. I understand you to testify that there was no such a thing there at the time of the accident?

A. There was not.

Q. That is your absolute positive statement?

A. Absolutely. That handle was not there at the time I fell. It was not there at the time of the

(Testimony of Clinton J. Hutchins.)

second visit, and it was not there at the third visit.

Mr. WARREN.—I ask that the record show that this exhibit has been referred to in connection with this witness' testimony for identification.

Q. You are wearing glasses, Mr. Hutchins?

A. Yes, sir.

Q. How long have you worn them?

A. About twenty years.

Q. You wear them constantly? A. Yes.

Q. Did you have them on on that morning?

A. No.

Q. Are you able to see as well without glasses as with them?

A. Not as clearly. I can see everything but it does not clear up until I put my glasses on.

Q. Now, with regard to the matter of your average income which you referred to, you say an average of fifteen or twenty thousand dollars per year; for what period does this average cover?

A. Well, it is not very often that I make less than that.

Q. Well, you have given that as an average; over what length [154] of time?

A. Well, during the last eight or ten years I should say.

Q. That is your own individual income?

A. Yes.

Q. Not including in that the income of the concern you have mentioned, the farming business?

A. No.

Q. This is also net, and not gross?

(Testimony of Clinton J. Hutchins.)

A. You mean by that?

Q. That is your clear income over expenses?

A. You mean over my living expenses?

Q. I mean that is your clear income, as an individual, of your business?

A. Certainly, that much and sometimes considerably more.

Q. And that has been the average for eight or ten years? A. I think so; yes.

Q. In this matter of brokerage, you having said your business was particularly that of buying molasses as a broker; what principals have you represented in the last year?

A. I represented the Western Grain & Sugar Products Company and Summers & Company, and then I represented also a concern in Chicago.

Q. With which of those concerns have most of your molasses buying contracts been consummated?

A. The Western Grain and Sugar Products Company.

Q. Your trip to the islands at that time was in their interests? A. Yes.

Q. When did you return again to the islands,—you say in May? A. Yes. **[155]**

Q. Of 1916, for the purpose of buying molasses?

A. Yes.

Q. And how long did you remain then?

A. Three months; that is, I remained here from the 15th of May to the 1st of August, because I was away from home three months.

Mr. WARREN.—That is all.

(Testimony of Clinton J. Hutchins.)

Redirect Examination of CLINTON J. HUTCHINS.

Mr. DAVIS.—Now, Mr. Hutchins, how many times did you see that Doctor Macadory on the vessel after he made the second visit to your stateroom?

A. I would see him every few hours.

Q. Every few hours? A. Yes.

Q. Well, now, how many times?

A. Oh, I must have seen him a dozen times.

Q. Just show the Court how you held your arm when you seen him each time.

A. I had the fashion of unbuttoning my vest in front and putting my hand through in the vest and carrying it in this way.

Q. With your other hand supporting it?

A. With my other hand supporting it.

Q. That is the way you went around each time you met the doctor? A. Yes. **[156]**

Q. And he seen you? A. Yes, he saw me.

Q. Saw you, thank you for the grammatical correction. A. Yes, I wanted it in the record.

Q. Well, he saw you? A. Yes.

A. He made quite an examination of your arm, did he, the second time he came to the stateroom?

A. Well, he wasn't there very long.

Q. Well, how long was he there?

A. Eight or ten minutes.

Q. Yes, and you were stripped? A. Yes.

Q. Low down? A. To the waist.

Q. Lying down? A. No, standing up.

Q. Did he have anybody with him? A. No.

Q. How many times did you meet the captain of

(Testimony of Clinton J. Hutchins.)

that vessel after this accident happened?

A. I saw the captain, I think it was the—I am not certain, Mr. Davis, but I think it was the day before we got into Hilo.

Q. How were you carrying your arm then?

A. As I remember it, in the same position.

Q. In the same position you have already described to the Court when you met the captain?

A. Yes.

Q. And did he see you?

A. Well, he must have seen me.

Q. Did he speak to you?

A. Well, he spoke to me but he didn't mention the injury.

Q. Eh? **[157]**

A. He spoke to me but didn't mention the injury at that time.

Q. He did speak to you? A. Yes.

Q. Now, did he see you come in—at any time did you meet him at dinner or anything?

A. Not to my knowledge.

Q. Not to your knowledge. Who was the person that assisted carrying you in or assisting you from the shower-bath to your stateroom, outside of the doctor? A. I think it was the bath-room steward.

Q. Bath-room steward; and now when you got to Honolulu you visited Doctor Hobdy professionally?

A. Well, yes, some time after I got here.

Q. And did he take an X-ray picture of your arm?

A. He did.

Q. And he made an examination of your injuries?

(Testimony of Clinton J. Hutchins.)

A. He made two X-ray photographs.

Q. He made two examinations?

A. Two photographs of the injury.

Q. And he also examined your injuries?

A. No, I don't think he made any examination at all.

Q. Eh?

A. He made no examination of the injury.

Q. Well, you had to strip and so forth for him to take these photographs? A. Yes.

Q. I mean this X-ray picture? A. Yes.

Q. And did he ask you about the accident or not, did Doctor Hobdy? A. Yes. **[158]**

Q. Yes, that is before he took it? A. Yes.

Q. He asked you how it happened and so forth?

Mr. WARREN.—I object to all of this as immaterial, your Honor.

Mr. DAVIS.—Did he? I am asking him as a matter of fact if the doctor asked him how the accident occurred.

The COURT.—I think that is immaterial.

Mr. DAVIS.—All right, your Honor.

Q. Now, Mr. Hutchins, you say you suffer still some inconvenience from your arm?

A. Yes, it is still sore; the muscles are sore.

Q. As counsel was examining you—let me have those valuable photographs, Mr. Warren, that represent the basin.

Mr. WARREN.—Referring to exhibit 3 of deposition of Mr. Scott, are you?

Mr. DAVIS.—Yes.

(Testimony of Clinton J. Hutchins.)

Q. Were you at the time you entered the shower there and before you fell, was you facing towards this marble slab where this handle is? A. Yes.

Q. And before you fell you shoved your right hand out? A. I did.

Q. You was—how wide is this thing?

A. I should say it is about two feet and a half or so.

Q. And you were standing right in there—

A. Just to one side.

Q. Were you more to the right or to the left side?

A. About in the center.

Q. Now, these pipes here,—one is a hot-water pipe, ain't it? [159] A. I don't know.

Q. Isn't it hot water there?

Mr. WARREN.—I object to the question.

Mr. DAVIS.—You brought it out yesterday; why didn't he catch hold of the pipe?

Mr. WARREN.—The witness says he don't know whether it was hot water or not.

A. As a matter of fact, I think it is hot water but I couldn't tell it of my own knowledge. It was steaming hot in the room. A heater right here.

Mr. DAVIS.—Then there must have been hot water there?

A. I think there was.

The COURT.—Was there a door at this bath-room, a door into it?

A. You mean to the general compartment, your Honor?

Q. I know there was an opening for you to enter.

(Testimony of Clinton J. Hutchins.)

A. Into the bath compartment, yes. No door; there was a rubber curtain on one side that was not —it was pulled back but not over the entrance when I went in.

Q. So that there was not any door to open and close, just a rubber curtain across the opening through which you entered the bath? A. Yes.

Q. And that rubber curtain was pulled back and you were there and testing the water to see whether it was the right temperature?

A. It was pulled back. Yes.

Q. Well, about how far across from the door of one bath-room was it to the door of the bath-room on the opposite side? **[160]**

A. You mean the two compartments?

Q. Yes, there was an opening there, hallway or a passageway between the two—

A. Oh, I see, about two feet and a half.

Q. The passageway was about two and a half feet? A. Yes.

Q. Well, was there a light in the room?

A. In which room?

Q. In the bath-room. A. Yes, on the ceiling.

Q. On the bath-room?

A. In the ceiling of the bath-room but none in the bath compartment.

Q. You say that this happened early in the morning? A. Yes.

Q. After daylight?

A. Half-past six, I think it was, just breaking day,—it was daylight.

(Testimony of Clinton J. Hutchins.)

Q. Was the light on?

A. Well, this bath-room, I think, has not any daylight entrance. I think it is artificial light, electrical light. You see, the bath-rooms are in the center of the ship between the two tiers of staterooms. There is a companion-way on each side of this state—of this bath-room and then the shorter laterals running down—

Q. When you slipped and fell, were both feet inside of the bath-room?

A. Inside of the bath compartment, yes.

Q. You had put them both in? A. Yes.

Q. And did you put one in first and then put the other in? **[161]** A. Yes.

Q. And it was,—how long had you been in the bath-room?

A. I was just starting to step in. I was leaning over with this foot over in the bath, and I leaned over like this to get the water and test it, putting it on my arms and so forth, and then I pulled over this foot and I went down like that and threw out this arm.

Q. When you were testing the temperature of the water you had one foot in the bath-room, and then you put the other foot in? A. Yes.

Q. And just as you put it in you slipped and fell?

A. Yes.

Q. Well, now, how far inside of the bath-room was the foot that you first put in, how far inside was it?

A. You see, this bath basin was about this deep and sloping a little bit, and my heel was away from

(Testimony of Clinton J. Hutchins.)

that, how far I couldn't say. I put my foot over in here just beyond the curve, well, it curves and then slopes a little towards the center.

Mr. WARREN.—Referring to exhibit 1.

A. I put one foot over and then brought the other one over.

The COURT.—Do you remember whether you had put the other foot down or not?

A. Yes, I had put the foot down.

Q. Well, the one you brought into the bath-room last, did you put it down? A. Yes.

Q. And as you put it down you slipped? **[162]**

A. Just after. I don't think I quite had all of my weight on it. I was practically almost upright with my weight on both feet, not quite, I think I was more on the right foot than the left.

Q. Can you tell what caused you to fall?

A. Why, I attribute it to the slippery condition of the floor, the slippery condition of the bowl, that is. I don't consider the bowl and its condition one that I would want to get into again.

Q. I wasn't talking about that. What I want to find out is what caused the fall.

A. The water was running in the bowl, the steward had turned that on. The water was on the surface of the bowl, and there was,—to my knowledge there was no lurch of the ship and no movement on my part. If anything, I was leaning forward instead of upright, if there was any difference, and there was no premonition of it, it was just very quick.

(Testimony of Clinton J. Hutchins.)

Q. Well, now, in regard to—you testified about the doctor coming to see you that morning. Did he ask you how you had,—how the injury had been sustained?

A. Well, we talked it over and I told him then in the shower-bath I had fallen out.

Q. Did he ask you anything about how you had fallen when he was examining your injury, did he ask you anything about that?

A. We talked it over generally; I don't know as he asked me that direct question.

Q. Did you tell him how it happened?

A. I told him how I had fallen, that I had fallen out of the **[163]** bath and injured my shoulder and I felt very badly injured, and in fact very sure that it was broken.

Q. Did you tell him that?

A. Yes, I felt the crunch of the bones, and I told him that. I said, "Doctor, I am sure I have got a broken arm."

The COURT.—That's all.

Mr. DAVIS.—Now, Mr. Hutchins, are you sure you reached out your right hand to grab before you fell?

A. Yes.

Mr. DAVIS.—That's all.

Mr. WARREN.—I would like to ask a question here. Referring to this Claimant's Exhibit 3, there is a rubber curtain hanging on a rod, you said. Can you recall whether that curtain was in the position shown in this picture or on the other side?

(Testimony of Clinton J. Hutchins.)

A. It was in the position it is now, just about, as I remember. I don't think it was quite so—as I remember I don't think it was quite so pulled together, I think it was spread a little bit more.

Mr. WARREN.—That is all, Mr. Hutchins.

The COURT.—You are excused, Mr. Hutchins. **[164]**

Testimony of Dr. W. C. Hobdy, for Libelant.

Direct examination of Dr. W. C. HOBDY, for libellant, sworn.

Mr. DAVIS.—What is your name, please?

A. W. C. Hobdy.

Q. Are you a doctor of medicine holding a diploma and licensed to practice medicine and surgery in the Territory of Hawaii? A. I am.

Q. How long have you been practicing here, Doctor? A. Seven years.

Mr. WARREN.—I will admit Doctor Hobdy's qualifications.

Mr. DAVIS.—All right.

The COURT.—His qualifications are admitted.

Mr. DAVIS.—Did you receive a visit from Mr. C. J. Hutchins professionally, and if so, when?

A. The exact date I cannot state, sir, but it was some time in May.

Q. Was it in March, Doctor? Excuse me for leading him.

A. Well, it was at the time of the Shrine parade. That is as near as I can arrange it. I saw him at that time. The date I had not the time to look up

(Testimony of Dr. W. C. Hobdy.)

as I was called on the phone to come over here this morning.

The COURT.—That was the 3d of April?

Mr. DAVIS.—Anyhow, Mr. Hutchins called on you professionally at that time?

A. Yes.

Mr. DAVIS.—Will you admit, Mr. Warren, that it was in the **[165]** month of April, because the doctor can verify that by his books.

A. I can find it in the books all right.

Mr. WARREN.—I don't make any admissions there.

Mr. DAVIS.—All right, Doctor, you will have to get your memorandum-book and verify these dates, eh? A. Yes.

Q. Anyway, it was in the year 1916?

A. Yes, last year.

Q. And you think in the month of March or April?

A. Yes.

Q. You will have to verify those dates afterwards. Now, did you make an examination of Mr. Hutchins' arm and shoulder?

A. Not extensively. I attempted to get a history of the injury. Mr. Hutchins was referred to me by Doctor C. B. Wood primarily for the purpose of having an X-ray examination made of his injured shoulder.

Q. Yes.

A. In attempting to find out how the shoulder was injured, I got the history of the accident so that I

(Testimony of Dr. W. C. Hobdy.)

could tell something about what part of the arm or shoulder to photograph.

Q. Exactly.

A. It was painful, very painful, and I did not make any extended examination of the shoulder itself or attempt to have him move it at all. I simply got his clothes off with as little trouble as possible, and I looked over this swollen arm and got the history of the case and then I made an X-ray photograph.

Q. From your superficial examination there, Doctor, did you—is it your opinion that he had suffered a fracture of the [166] arm?

A. I thought there was in all probability a fracture or a severe injury of the shoulder, or the head of the arm bone, the humerus.

Q. Then you made an X-ray picture; what did you find?

A. I found a fracture of the neck of the humerus, which had not only been broken but had been driven into the head of the bone. It is what we call an impacted fracture.

Q. Is that a serious fracture?

A. Any fracture of the shoulder joint, around the shoulder joint is a serious fracture, yes, sir.

Q. Was that one? A. Yes.

Q. Now, Doctor, you haven't got that X-ray plate, have you? A. Not with me; no, sir.

Q. But you have that in your office?

A. Yes; it is at my office.

Q. Could you file it here in the court? A. Yes.

Mr. DAVIS.—All right. Now, Mr. Warren, do

(Testimony of Dr. W. C. Hobdy.)

you want us to bring it here and identify it, or do you wish us to file it?

Mr. WARREN.—I don't think I will make any admissions.

Mr. DAVIS.—I think you will have to go and bring that plate and verify it, that X-ray plate, Doctor. Counsel won't admit, I am sorry, so we will have to put it in.

Q. Now, Doctor, from the history that—from what Mr. Hutchins said to you about how this accident happened, and so forth, if you had been called in the first instance, he was injured on the 18th of February, what treatment would you [167] have given, or what treatment in your opinion would have been scientific and skillful?

Mr. WARREN.—I object to the question. In the first place, it is incompetent and would be based on hearsay statements made to him by Mr. Hutchins, and that it is absolutely outside of the case. That Doctor Hobdy undertook to make X-ray pictures I don't think any opinion he would state based on the history or statement made of the case to him by a patient would be admissible.

Mr. DAVIS.—In the first place, Doctor Hobdy got the history of what took place in a certain place and made an examination of the shoulder, and in the third place he took an X-ray picture of it and he knew all about it. The idea of saying he can't give an opinion of what treatment ought to have been given,—why, the thing is absurd. He ascertained just what the injury was from the patient first hand as to how the

(Testimony of Dr. W. C. Hobdy.)

accident happened, and he made an examination there, and he is a surgeon whose qualifications are admitted, and he was sent to him by the physician who tended Mr. Hutchins.

The COURT.—I understand that he is entitled to give his opinion, but Mr. Warren raises the objection that it would be predicated on what Mr. Hutchins told him.

Mr. DAVIS.—No, I am predicating it on all the X-ray pictures and everything.

The COURT.—I think in the form it is in the question is objectionable. I think he is entitled to give his opinion as to what treatment would be proper for the injury immediately after it happened from what he found to be the [168] injury.

Mr. DAVIS.—All right, I will change the form of the question.

Q. Then, what in your opinion would have been the proper treatment of a wound which you ascertained by means of an X-ray and by your examination of it?

Mr. WARREN.—I object to that question, may it please the Court, on the ground that it assumes that the condition as afterwards ascertained and determined by the X-ray was known or could have been known or probably should have been known to the physician making the initial examination.

The COURT.—Overrule the objection.

Mr. WARREN.—An exception noted, your Honor.

A. In just two words, absolute immobilization, keep the arm perfectly still.

(Testimony of Dr. W. C. Hobdy.)

Mr. DAVIS.—Eliminating the X-ray from the examination you made, what would be a proper treatment?

Mr. WARREN.—I object to that as hearsay.

Mr. DAVIS.—Never mind about the hearsay; what would be the proper treatment?

Mr. WARREN.—I object to any testimony that the doctor might give—

The COURT.—One moment, gentlemen. Doctor, did you testify that you made an examination for yourself having an X-ray, or that you made an examination for yourself other than the X-ray?

A. An inspection. I did not attempt to move the arm at all. I did not attempt to have the patient put the arm through any motions at all, that is what I testified to, that I [169] inspected it, and then after that by palpation. I tried to ascertain if there was anything that I could feel there, this swelling, that would tell me exactly where to focus my X-ray. Further than that I did not go.

Q. To see what was the portion to photograph?

A. Yes.

The COURT.—I think the testimony is admissible.

Mr. DAVIS.—All right; then what treatment would you have—

A. Absolutely the same, sir; I can answer exactly in the same two words, absolute immobilization, keep the arm perfectly still.

Mr. DAVIS.—Take the witness.

Cross-examination of Dr. W. C. HOBDY.

Mr. WARREN.—Your answer, Doctor, in each of

(Testimony of Dr. W. C. Hobdy.)

these cases where you have said absolute immobilization assumes that the condition which was disclosed by the X-ray was known to the physician at the time of the injury?

A. Yes. In treating it by trying to keep that arm absolutely still or nearly as absolutely still as would be possible, I would do it on the assumption on a tentative diagnosis that he had a fracture. That would be based on the swelling, the loss of function and the suffering that this patient had, not enough to make me absolutely sure that he had a fracture but until I could rule that he had I would treat it safely from his standpoint as a fracture [170] and keep it still so that he wouldn't do himself any more damage or disturb things any more than possible.

Q. There would not be swelling within thirty minutes after the injury?

A. Not—do you mean in a fracture?

Q. Yes.

A. Quite frequently, yes, it would begin to show.

Q. Until you took the X-ray you did not know except from hearsay what was the matter?

A. I had a very close opinion as to what was the matter from hearsay, yes, that is, from the history I got from the patient and that is what I base—it is part of the function of any diagnosis a doctor makes, and then what his patient tells him.

Q. And if the patient had made no disclosure and you had had no history given you from other sources, your examination or inspection of the shoulder in your office at that time would not have disclosed to

(Testimony of Dr. W. C. Hobdy.)

you what was the matter?

A. If I did not know anything about how this accident had occurred, if this man had been deaf and dumb and simply walked into my office with a swollen shoulder and could give me no history at all as to the accident I wouldn't have known—I wouldn't have been sure at all in my mind, Mr. Warren, as to what had happened, no, sir, I wouldn't at all.

Mr. WARREN.—That is all.

The COURT.—I want to ask you a question, Doctor Hobdy. You did make an examination of him at the time you testified?

A. Yes. [171]

Q. And you did learn what was the injury and what injury he was suffering from at that time?

A. Yes.

Q. Now, do you know, can you tell from the injury itself what symptoms were manifested at once or in the course of thirty minutes after—what symptoms necessarily manifest themselves say thirty minutes after the injury was sustained, what was the effect of it?

A. Yes. First of all, pain. Second and most important, the loss of limitation or function.

Q. Yes, what do you mean by that?

A. Inability to move the arm about.

Q. Yes.

A. Third, that within thirty minutes after in all likelihood a swelling in that seat. Had it been a little lower down it would have been quite visible thirty minutes after, but it might have manifested itself

(Testimony of Dr. W. C. Hobdy.)

only as an increased tenseness of the tissues there because there is a large muscle over that which would have obscured it somewhat, but there are three things which this gentleman undoubtedly did feel, first, pain. He could tell that he couldn't use his arm, he didn't know it was broken, perhaps, but there was the pain that attempted motion gave it, and third, it would begin to swell.

Q. Now, I want to ask you whether or not a competent surgeon should have been able from the symptoms that necessarily manifest themselves, say thirty minutes after an injury, to have diagnosed what was the matter.

A. I think any competent man would have had just a close idea— [172]

Q. Knowing the history of the case which you of course learned from the patient? A. Yes.

Q. That is the first thing a doctor does?

A. The first thing.

Q. The first thing a doctor does is to learn the history of the case from the patient? A. Yes.

Q. And then examines the injury? A. Yes.

Q. From the history of the case learned from the patient and from the symptoms that manifest themselves, could you tell whether or not a competent surgeon should have known that there was probably a fracture? A. Yes.

Mr. WARREN.—Just a moment; you answered so quickly, and I want to have my record show my objection to that as based on hearsay to such an extent that the question is improper.

(Testimony of Dr. W. C. Hobdy.)

The COURT.—All right; as far as that is concerned it is the duty of a doctor—of course, I didn't let Doctor Hobdy testify as to what his opinion was from what Mr. Hutchins told him, but it is natural that a surgeon would get the history from the patient. If he didn't he neglected his duty not to do it?

A. Absolutely, yes, sir.

Q. It is supposed that you learned how the injury occurred from the patient. It is an issue in this case as to the competency of the ship's surgeon, and I want to know whether a competent surgeon should have known from the symptoms which were manifested, which must necessarily [173] have manifested themselves within thirty minutes after the injury and also from the symptoms of the case as learned from the patient. I allow you an exception.

A. I think so; yes, I think so. I mean by that that we have the history and these three symptoms that would stand out. Going into any good surgeon in this town, any good surgeon in this town, pick any one of them, and the man would have immediately made a diagnosis tentative of fracture. I wouldn't say that I could say the arm bone itself was broken, but this collar-bone might have been broken or the cap that goes over here, with a plunge like that. I think the idea of fracture would enter into any competent surgeon's mind at once.

Q. What is the treatment for any of these things?

A. Following that, the treatment is a little bit different. An examination made immediately would have told plainly whether or not the collar-bone was

(Testimony of Dr. W. C. Hobdy.)

broken, but you can rule that out because it is right under the skin and can be seen it was not broken. This bone that comes over here, the shoulder-cap, or if you want the name for it, the olecranon. You can also tell about that. Now, you rule out these two and then the chances are all in favor, and the deduction would be that the injury was to the neck of the arm bone or humerus. That would be the inference. You get at these things by ruling out.

Q. Now, was there anything in the proper treatment for the injury that he really sustained that would be improper in treating a bruise?

A. I don't know that I understand your Honor's question. [174]

Q. To properly treat the injury that was sustained, properly treat it, give it the proper treatment immediately after the injury that it should have received, the immobilization, was there anything in doing that that would have been improper in treating a bruise?

A. No, sir, but if you put it the other way, yes. That is, was there anything improper in the treatment of a bruise if it were a fracture, yes, but not that way. You see what I mean?

Q. Yes, I understand.

A. For the treatment—if he had treated it as a bruise, a bruise as a fracture, there is no great harm done to the patient—no, I mean if he treats,—yes, if he treats a fracture as a bruise then there may be harm done to the patient.

Q. But no harm done to the patient in treating a bruise as a fracture?

(Testimony of Dr. W. C. Hobdy.)

A. No. In other words, if I make a mistake in Hutchins' case and I say, look here, I think you have got a fracture and I am going to put the arm up and keep it absolutely as still as possible, if it was only a bruise I have done the patient no harm, that is what I mean. On the other hand, if I say you have only got a bruise, the thing for you to do is to work the arm and have it massaged also to give it—to get the soreness and stiffness out of the muscle that has been bruised in this accident that has happened to you, then I am doing the wrong thing.

Mr. WARREN.—I want to ask you, Doctor, in one of your answers to the Court's question as to the proper treatment [175] if the competency of a physician in giving the treatment rests upon your own knowledge of the case as stated to you by Mr. Hutchins, in other words, it depends upon the history that was stated to you and you must assume that that history is the same?

A. Would you mind stating that again?

Q. Your answers to his Honor's questions depend upon you having historical knowledge of the case?

A. Yes. I could not have made—had he walked in and simply made a motion and let it go at that I could not have made a diagnosis of fracture.

Q. So that your answers as to whether or not the treatment was proper or improper of the doctor's work, whether it was competent or incompetent depends upon your having acquired knowledge of that case?

A. Yes. When I said any surgeon I meant, Mr.

(Testimony of Dr. W. C. Hobdy.)

Warren, provided he had the three symptoms. I think—

Mr. WARREN.—That is all. I move your Honor to strike the answers of the witness to these several questions, that they are founded in part on hearsay.

The COURT.—Overrule the motion to strike.

Mr. DAVIS.—I would ask the Court to take a recess until the doctor goes and gets those plates.

The COURT.—Take a recess for five minutes.

AFTER RECESS.

Mr. DAVIS.—I ask that the deposition of Lefebre, and the depositions of John B. Morris and W. P. Metzler, be now opened by the clerk and read.

Mr. WARREN.—I consent to the depositions being opened by [176] the clerk but object to them being read or heard at this time.

Mr. DAVIS.—On what grounds?

Mr. WARREN.—Except so far as the depositions for libellant are concerned.

Mr. DAVIS.—Then all we want is the deposition of the witness for the libellant, Lefebre, and I ask that it be read. Will I read it or will the clerk? I will read it.

(Mr. Davis reads direct examination of deposition of Lefebre.)

Mr. WARREN.—I ask the answer be stricken out as hearsay.

The COURT.—Yes.

Mr. WARREN.—The handle on the wall, I move it be stricken, referred to page 4 of the deposition of Lefebre, the answer of the witness, the third answer

(Testimony of Dr. W. C. Hobdy.)

of the witness on that page.

Mr. DAVIS.—No objection was raised at the time of taking the deposition.

The COURT.—Objected to on the grounds of hearsay; it will be stricken out.

Mr. WARREN.—I move to strike the entire answer as hearsay and opinion, being the fourth answer on page 4.

The COURT.—The answer is stricken.

Mr. WARREN.—I will read the cross-examination. (Reads.) [177]

Testimony of Dr. G. F. Straub, for Libelant.

Direct examination of Dr. G. F. STRAUB, for libellant, sworn.

Mr. DAVIS.—What is your name?

A. George F. Straub.

Q. Are you a doctor of medicine holding a diploma and licensed to practice medicine and surgery in the Territory of Hawaii? A. I am.

Mr. WARREN.—His qualifications are admitted.

Mr. DAVIS.—All right.

Q. In the month of February, did Mr. C. J. Hutchins call upon you in connection with any—

A. February, 1916, on the 11th it was. I looked it up in my book.

Q. Did you make an examination of his injuries?

A. I took an X-ray picture. He was brought in, or sent in by Doctor Wood; he was a patient of Doctor Wood's, and he was sent in with the request to take an X-ray picture, and I took an X-ray picture

(Testimony of Dr. G. F. Straub.)

and found an impacted fracture of the right upper end of the humerus.

Q. Now, Doctor Straub, will you kindly look at this plate. Is that the plate you took? A. Yes.

Mr. WARREN.—That is the plate marked for identification in this case as Libellant's Exhibit "A" for identification?

Mr. DAVIS.—Yes. Now, your Honor, I ask that this be received in evidence and marked Libellant's Exhibit "A." [178]

Mr. WARREN.—No objection.

Mr. DAVIS.—Now, Doctor Straub, you made some examination, of course Mr. Hutchins had to strip, did he?

A. Yes, sir.

Q. And did you make some examination of that injury?

A. Well, I tried. I moved the arm and I felt some symptoms which pointed to a fracture, and I also found an inability of the patient to moving the arm, he couldn't elevate it, due to a severe injury to the upper part there.

Q. What would you say as to whether or not he was suffering pain, in your opinion?

A. I know he had pain at that time.

Q. Now, from your examination made at that time, this injury happening on the 18th of February, what treatment would you—what would have been the proper treatment of that injury after it happened on that date, in your opinion?

Mr. WARREN.—Just a minute. I want to ob-

(Testimony of Dr. G. F. Straub.)

ject there. There is no proper foundation laid for the question. It does not appear upon what the answer could be based except as disclosed by the X-ray picture.

Mr. DAVIS.—Your Honor admitted the testimony of Doctor Wood—I mean of Doctor Hobdy, and Doctor Straub says he moved the arm and made an examination.

The COURT.—He does not ask what he heard from Doctor Hobdy. It is supposed his knowledge is based on what the injuries are and what the treatment should have been after receiving the injuries.

Mr. DAVIS.—Yes, your Honor.

The COURT.—Overrule the objection. [179]

Mr. DAVIS.—Will you kindly state, Doctor Straub, what treatment?

A. If I had to treat the case I would have immobilized the arm.

Q. You mean by that what, in technical terms?

A. To prevent the arm from being moved, to be absolutely at rest.

Q. What would you have done in that connection, Doctor Straub?

A. I would have—it all depends in which position the arm would have been the most comfortable. Of course it is hard to fix a standard rule,—

Mr. WARREN.—Just a moment; I am objecting and want to be heard before you finish your answer. It is not competent evidence what the witness on the stand would do or would have done in a particular case.

(Testimony of Dr. G. F. Straub.)

The COURT.—Sustained.

Mr. DAVIS.—In your opinion, I am asking you what would have been the proper treatment.

The COURT.—I think that is all right.

Mr. WARREN.—Same objection, your Honor.

The COURT.—I think it is admissible.

Mr. DAVIS.—Go ahead, Doctor.

A. I say I would have immobilized it, either have put the arm in a simple sling and fastened it with bandages, or would have put a triangle of wood which is a much favored treatment in these cases, and put it in the most comfortable position. There was not much discoloration there, and I believe it is just mainly a matter of immobilizing an arm in these cases than trying to set it or manipulate [180] it greatly.

Q. From the examination you made, Doctor Straub, and from what you saw there before you took the X-ray picture, did you have any opinion as to whether there was a fracture there or not?

A. I remember at that time I could feel a slight crepitation which would make me suspect a fracture. Of course there was no absolute evidence.

Q. Would you consider that the physician who made an examination of that arm after the accident happened and a statement as to how the accident happened and so forth by a patient, if he should treat that as a bruise would you consider him a competent physician?

Mr. WARREN.—I object to that question, your

(Testimony of Dr. G. F. Straub.)

Honor, as being ambiguous and calling for the opinion of the witness—

The COURT.—I sustain the objection on that point.

Mr. DAVIS.—In your opinion, from your examination, Doctor Straub, that you made of Mr. Hutchins' arm, what in your opinion would have been—you say the proper treatment would have been immobilization?

A. Yes, after knowing of course that included the knowledge I had after taking the X-ray photograph.

Q. Sure, it includes it all, but from the symptoms exhibited there before you took the X-ray picture, I asked you if you formed an opinion as to whether or not you suspected a fracture there.

A. I did suspicion there was.

Q. Exactly, and having that suspicion you would have applied that treatment, would you? [181]

A. I would have; yes.

Q. As any competent physician would have done?

Mr. WARREN.—I object to the question as calling for an opinion.

Mr. DAVIS.—I submit it is a perfectly proper question.

The COURT.—I don't think so, objection sustained.

Mr. DAVIS.—On what grounds, your Honor?

The COURT.—What any competent physician would have done.

Mr. DAVIS.—That's the only way to put it, it appears to me.

(Testimony of Dr. G. F. Straub.)

Q. Now, if a physician had been called in directly after that accident occurred and a history or a statement of how the accident occurred had been communicated to him, and if he made an examination, what treatment should he have given Mr. Hutchins in your opinion?

Mr. WARREN.—I object to the question on the grounds that it is incompetent. It assumes the history is stated, which is not brought to the knowledge of this witness, and he cannot assume or pass upon the competency of the treatment not knowing what history was stated to the doctor at the time.

Mr. DAVIS.—Mr. Hutchins stated that he stated fully to the ship's doctor just exactly what happened, and it is based on that foundation. An objection of that kind is absurd. In fact, in all the testimony in this case I have laid the foundation for it. Mr. Hutchins stated it fully and this doctor knew all about it, knew how the accident happened, was there a few minutes afterwards, made an examination and so on. What stronger foundation can anybody lay for it? I am asking Doctor Straub for an expert opinion.

The COURT.—I will allow the testimony in. [182]

Mr. DAVIS.—Kindly answer the question, Doctor Straub.

A. Will you repeat the question, please?

Mr. WARREN.—Right here, before going further, it might be just as well, your Honor, to mention the fact that at different times exceptions have

(Testimony of Dr. G. F. Straub.)

been taken to your Honor's rulings and at other times not.

(Last question read by the reporter.)

A. Pending any further examination which would have completed the picture, I would have immobilized the arm.

Mr. DAVIS.—And if the injury had simply been a bruise?

A. I would have immobilized the arm.

Q. Yes.

A. Because I would have to have the suspicion, and such a suspicion is justified in looking over the records in such cases all over the world, that there is very often a fracture perhaps even of a slight nature which will be aggravated by being moved afterwards, and that such fractures happen even in cases where it is not suspected at all, so one can't be suspecting enough in these cases and give the patient the benefit of the doubt until the X-ray picture is taken and until the case is cleared up.

Q. And would immobilization if it had only simply been a bruise, would immobilization done any harm?

A. It wouldn't have done him any harm under any conditions.

Q. But would you consider that treating that as a bruise and not immobilizing it, would that be liable to do harm?

Mr. WARREN.—I object to the question, no proper foundation, and it assumes matters in the knowledge of the witness not included in the question. [183]

(Testimony of Dr. G. F. Straub.)

Mr. DAVIS.—I simply ask if there was a simple bruise there, would immobilization have done any harm.

The COURT.—Objection overruled.

A. No, it would not.

Mr. DAVIS.—In treating that fracture simply as a bruise, would that do harm to not immobilize it?

A. It might.

Q. Was it skilful treatment to allow that arm to remain just as it was without bandaging it or without immobilizing it, from the 18th of February until the vessel arrived here on the 21st?

Mr. WARREN.—Object to the question on the ground that it has no proper foundation and calls for the opinion of the witness upon matters not stated or within his knowledge.

The COURT.—He has given his opinion, I think, as far *as can* give it, Mr. Davis; he testified to what treatment was proper.

Mr. DAVIS.—He could state in his opinion,—Mr. Hutchins testified that nothing was done to his arm, no kind of a bandage or anything from the time of the accident, by the doctor.

Q. I will put it in another form. Would you consider a physician a competent physician who would have examined the arm and who had been given an account of the accident, who would simply do nothing to immobilize it towards remedying the arm in any way, would you consider him a competent physician?

Mr. WARREN.—I wish to note the objection that

(Testimony of Dr. G. F. Straub.)

the question [184] assumes matters not within the knowledge of the witness and not stated in the question and would be an opinion, without any foundation.

The COURT.—I don't think he can give his opinion on the competency of the physician in that way. The neglect may have been due not only to incompetency but to negligence.

Mr. DAVIS.—Would you consider a man a competent physician who would allow the arm to remain just as it was after the accident happened without doing anything, for a period of three days, would you consider that skilful treatment?

Mr. WARREN.—Same objection, if your Honor please. The facts and circumstances are not within the knowledge of the witness and are not stated in the question.

Mr. DAVIS.—Yes, I have stated them. He knows the accident happened, and I stated now, would he consider that skilful treatment if the arm was allowed to remain in the same condition it was after the accident for a period of three days after it happened, that would be from the 18th to the 21st.

The COURT.—I will allow it to go in and overrule the objection. Answer the question.

A. You mean to say whether it was skilful treatment?

Mr. DAVIS.—Yes, was that skilful treatment?

A. I don't see where the treatment comes in, there was no treatment at all.

(Testimony of Dr. G. F. Straub.)

Q. Well, if he done nothing, would that *he* the duty—well?

A. It is no treatment, but it is the next wisest thing to do. [185] If you don't want to do anything at all, better leave it alone.

Q. Wasn't it his duty to do something under these circumstances?

Mr. WARREN.—Object to the question as leading.

The COURT.—That is kind of leading.

Mr. DAVIS.—Do you consider a man a competent physician who would do the like of that?

Mr. WARREN.—I object to that as having no proper foundation.

Mr. DAVIS.—Well, you consider then doing nothing skilful treatment?

A. If a man didn't know exactly the nature of that injury—

Q. Yes?

A. —it would show skill on his part to refrain from anything that might do harm.

Q. Yes?

A. In so far as even manipulation or forced moving of that arm could have done still more harm than not doing anything at all.

Q. What would have been skilful treatment under such circumstances?

A. That would mean what I have indicated, immobilization.

Q. Exactly. A. That is the best treatment.

Mr. DAVIS.—All right; that is all, Doctor.

(Testimony of Dr. G. F. Straub.)

Cross-examination of Dr. G. F. STRAUB.

Mr. WARREN.—The only thing I want to ask you Doctor, is, you [186] said the 11th of February?

A. I saw the case on the 11th of February, I think it was the 11th—or the 21st, I got a little memorandum here, I can refresh my mind. No, I haven't put it down.

Q. Would the date on the plate settle the question?

A. I think so.

Q. That is February 21st.

A. I think that is the date. We generally write the date on the plate, it was either the 11th or the 21st.

Mr. DAVIS.—Would the date on the plate settle it?

A. Yes.

Q. I will just show you the plate so as to make sure of that.

The COURT.—Well, Mr. Warren said it was the 21st.

Mr. DAVIS.—21st of February, 1916; that's the date?

A. Yes.

The COURT.—That is all, Doctor.

Mr. DAVIS.—We will recall Doctor Hobdy. [187]

Testimony of Dr. W. C. Hobdy, for Libelant (Recalled).

Direct examination of Dr. W. C. HOBDY, recalled.

Mr. DAVIS.—Now, Doctor Hobdy, have you the plate that you took?

A. Yes.

Q. Is that it? A. Yes, I have two.

Q. Yes, you have two there.

A. There was some question about the date on which this work was done, too.

Q. Yes, when was it done, Doctor?

A. April 2d.

Q. What year? A. 1916.

Q. These are the two plates that you made of the libellant, Mr. Clinton J. Hutchins, in your office in the city and county of Honolulu? A. Yes.

Mr. DAVIS.—We offer these in evidence and ask that they be marked Libellant's Exhibits "B" and "C."

Mr. WARREN.—No objection.

The COURT.—All right. If that is all you wish to ask the Doctor, he is excused.

Mr. DAVIS.—That is all; thank you, Doctor.

Mr. WARREN.—No questions, your Honor.

The COURT.—You are excused, Doctor. Adjourn court until Monday morning, February 19, 1917, at 9:00 A. M. [188]

In the United States District Court, in and for the Territory of Hawaii.

CLINTON J. HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," etc.,

Libellees.

Honolulu, H. T., February 19, 1917, 9:00 A. M.

The COURT.—Proceed, gentlemen.

Mr. WARREN.—I will resume the reading of the cross-examination of the witness Lefebre, at the middle of page 7. (Reads.)

Mr. DAVIS.—Now, I will read the redirect examination of Lefebre. (Reads.)

Mr. Warren reads recross-examination of witness Lefebre.

Mr. DAVIS.—I understand that Doctor Macadory, the ship's doctor on the "Great Northern," is now in the Territory of Hawaii, and it is up to the libellees to get him.

The COURT.—This rule with reference to the duty of the ship and its physician, it is rather new to me, and I would like you gentlemen to brief it and file your briefs on [189] that. If I understand Mr. Warren, he maintains that a ship is liable only in case it employed an incompetent physician and were negligent in doing so and injury resulted

from the incompetence of the physician, and in case the company was negligent in going into his qualifications. As far as the proof goes up to date the doctors have testified that the symptoms that developed wouldn't show from this injury in a short time after—that from the symptoms that would naturally exhibit themselves immediately after this injury, that a competent physician should have known that there was a probable fracture and should have treated it for a fracture. Now, the only thing to be proved as to the knowledge of the shipping company is as to their negligence. Of course the testimony of these doctors would tend very strongly to prove, to put it mildly, that the physician, Doctor Macadory, was not competent otherwise he would have treated this case in the way in which they say a competent physician would have treated it, but where is the proof as to the knowledge of the company as to negligence, Mr. Davis?

Mr. DAVIS.—The mere fact that they employed this physician shifts the burden of proof, and further, your Honor, it also appears that the master of that vessel in whose care the passengers were did nothing, not even inquire about the passenger, and the same duty is imposed by law upon the master of that steamship as it should be toward other seamen, and the highest evidence of the incompetency in there is he gave the man two pellets. He came in the [190] next morning and did nothing further. There can be no stronger evidence than that coupled with the fact that the captain of the vessel did abso-

lutely nothing. Now, your Honor has asked me about the duty. It is imposed by law upon them to carry a competent physician and surgeon. The Federal statute, 724, is before your Honor, Act of August 2, 1882, entitled an act to regulate the carriage of passengers by sea.

The COURT.—Have you gentlemen any cases in which that act has been considered, showing what the duty imposed on a ship is, where an action has been brought involving the consideration of the act, whether or not the ship was liable in case a physician were incompetent without any proof as to knowledge on the part of the company?

Mr. DAVIS.—In 154 Massachusetts, 272, the act is so construed in O'Brien versus The Cunard Steamship Company, by the Supreme Court of Massachusetts.

Mr. WARREN.—I will be pleased to file a memoranda of authorities on that point. I have a number that will dispose of the matter.

I would suggest, if there is no objection, I am perfectly agreeable to saving this time by reading some of the libellee's depositions. I will first read the deposition of Mr. Walter A. Scott, for the claimant, taken at San Francisco, direct examination by Mr. Carey. (Reads direct examination.)

Mr. Davis reads cross-examination of Walter A. Scott.

Mr. WARREN.—The next deposition I would like to read is that of H. K. Relph, beginning on page 20, direct examination [191] by Mr. Carey.

(Testimony of H. E. Wescott.)

Mr. DAVIS.—I will read the cross-examination on page 24. Let his Honor take the testimony and read it by himself and consider it. Let us consider it as read. Your Honor will have to read it anyway.

Mr. WARREN.—Except, your Honor, there may be objections to be made and ruled upon. Perhaps it would be a good idea for us to go over these Tuesday and if we find there are objections to be made they can be specifically pointed out. Your Honor can read the testimony.

The COURT.—I can just consider that objections are made in this testimony such as you see fit to point out. Counsel shall have the right to make specific objection to any portion of the testimony that is in.

Mr. WARREN.—It being understood, your Honor, that thus far I have not offered these depositions but will offer certain of them where I do not produce the witnesses in person.

Mr. DAVIS.—To which we offer no objection.

Testimony of H. E. Wescott, for Libelant.

Direct examination of H. E. WESCOTT, for libelant, sworn.

Mr. DAVIS.—Mr. Wescott, what is your name, please?

A. Herbert Edward Wescott.

Q. Where do you reside, Mr. Wescott?

A. In Honolulu. **[192]**

Q. What is your business?

A. Purchasing agent for the city and county.

(Testimony of H. E. Wescott.)

Q. For the city and county of Honolulu?

A. Honolulu.

Q. And how long have you resided in the Territory of Hawaii?

A. Four years the first of this year.

Q. Do you know the steamship "Great Northern"? A. Yes, sir.

Q. Was you a passenger on her at any time, and if so, when?

A. No, sir; I have not been a passenger.

Q. Did you go aboard of this steamer "Great Northern"?

A. Yes, while she was here I went on board at different times.

Q. When?

A. As near as I remember, the latter part of March last year.

Q. March of 1916? A. March, 1916; yes.

Q. Did you have occasion to visit any of the bathrooms on board of the steamship "Great Northern"?

A. Well, I was in company with Mr. Bicknell, the city and county auditor. We paid a visit to these showers and all the rooms open on that main deck, the deck on which the gang-plank is.

Q. Which deck is that—do you know which deck that is?

A. I don't know what they call it, but I could go right to it, the deck just above the dining-room.

Q. C Deck. Well, you don't know; the deck above the dining-room?

(Testimony of H. E. Wescott.)

A. Yes, the stairs led down from that to the dining-room.

Q. Did you have occasion to visit the shower-baths there? A. Well, we did visit them; yes. **[193]**

Q. How many of these baths did you visit, Mr. Wescott?

A. Why, we went into every bath shower on the ship—to every shower on that deck, I mean. We walked down one alley and up the other. As I remember, it is about amidships; it has an alley on both sides of the entrance.

Q. You visited the bath amidships on that deck?

A. Yes.

Q. Just look at that photograph and tell me do you notice anything absent in the bath you visited that is on there?

Mr. WARREN.—You are referring now to Plaintiff's Exhibit 1, attached to Mr. Scott's deposition.

A. I notice very prominently here a handle that was not there at the time. That is one reason we visited these. We happened to know of—

Mr. WARREN.—I object to a statement of the reasons.

Mr. DAVIS.—Anyway, you visited it?

A. Yes.

Q. And from information received, you took the opportunity and pains to see whether or not that handle was in that particular bath-room?

A. We did; yes.

Q. Was it there?

A. It wasn't there at that time.

(Testimony of H. E. Wescott.)

Q. When was this?

A. That was March, 1916, the latter part of March when the vessel was here in Honolulu.

Q. When the vessel was here in Honolulu?

A. Yes.

Mr. DAVIS.—That's all. **[194]**

Cross-examination of H. E. WESCOTT.

Mr. WARREN.—In saying that this handle was not there at that time, and pointing to this photograph you have, put your finger on the handle on the center of the back well of that shower compartment visible just by the edge of the wall.

A. Yes, sir, that handle that is shown there.

Q. Does that more plainly appear in the center of Plaintiff's Exhibit 2?

A. Yes, that looks like the same shower, but the handle appears in the center of the slab.

Q. Now, you say it was not in that particular shower. Do you know which particular shower this is a photograph of? A. I do not.

Q. Did you go to look at that bath-room at the request of Mr. Hutchins or at his instance?

A. No, sir, I knew of his accident, but it was just an accident that we visited the boat on this day. After lunch Mr. Bicknell and I walked down the street and saw the "Great Northern" at her dock, and I suggested,—as I had never been aboard the boat I suggested we take a walk down and look over the boat. Mr. Bicknell hadn't seen it and we both went down and looked into these things, to see the condition of it.

(Testimony of H. E. Wescott.)

Q. Who is this other man you mention?

A. Mr. Bicknell, the auditor for the city and county. [195]

Q. James Bicknell? A. James Bicknell, yes.

Q. And he went with you through the rooms?

A. He and I went together; yes.

Q. Can you give that date any more particularly—was it the first or the second return of the vessel?

A. As I remember it, it was the third trip here. She came here during the carnival the first trip, as I remember, and made one trip to Honolulu and back to the coast in the interim, that is, there was one trip I hadn't seen the boat. It was the third trip here, that would bring it about the latter part of March or the first of April, as near as I can remember, without looking at the dates.

Mr. WARREN.—That is all.

Redirect Examination of H. E. WESCOTT.

Mr. DAVIS.—Now, then, can you locate that particular bath-room where you say the handle wasn't more definitely?

A. I could go to it, yes.

Mr. DAVIS.—If there is any doubt about this being the particular bath-room where Mr. Hutchins entered, I would ask the Court that we go down and view it and have Mr. Wescott point it out and then I will put Mr. Hutchins on to show that is the bath-room.

The COURT.—I will order that the witness, with Mr. Warren and yourself and Mr. Hutchins, go and locate the particular bath-room where you say there

(Testimony of H. E. Wescott.)

was not any handle in just **[196]** now, but you can do that any time to-day, and perhaps I will go.

Mr. WARREN.—I would like to have your Honor go because in connection with the depositions there will be more testimony about the bath-room.

Mr. DAVIS.—Would your Honor say half-past one, or one o'clock?

The COURT.—Say about three-thirty.

Mr. DAVIS.—Yes.

Mr. WARREN.—I wish to ask him a question. Did you examine more than one of the bath-rooms?

A. Sir?

Q. Did you examine more than one of the bath-rooms?

A. Why, yes, sir; there were other baths as I remember—

Q. Shower-bath rooms?

A. There was only one shower-bath I saw, that is just amidships.

Q. Well, did you examine the one right opposite it?

A. Well, this was in the center of the boat; there is a door leading either way into the—

Q. You say this was on the deck immediately above the dining-room? A. Yes.

Q. You don't know whether that is C deck or what deck?

A. I don't know the name for it, no, sir, but it is the same deck the purser's office is on.

Q. Did you examine any other shower bath-room in which you say there was no—

(Testimony of H. E. Wescott.)

A. I looked into two rooms where there were tubs.

Q. As I understand you, this handle, I will call it, that is on the marble slab in the rear of the bath-room as shown [197] by the photographs you have, and Plaintiff's Exhibit 2—Libellant's Exhibit 2 was not on the rear of that slab when you examined it?

A. No, sir; the shower we looked at there was absolutely nothing, and these looked pretty slippery here and we remarked at the time—

Q. Never mind that. There was not any handle down on the back of this place?

A. No, sir, no handle.

Q. This exhibit here, referring to exhibit No. 3, showing the same, was it there then, was that there —was there any handle on there, the rear side of it or on the side of it, either side of it?

A. No, sir, we saw no handle.

Q. There was no handle there of any kind?

A. No, sir.

Q. Well, did these pipes come down?

A. Yes, this pipe was there, hot and cold water.

Q. This rod there?

A. Well, I didn't notice that, but I know there was a curtain hanging there.

Q. But there was no hold of that kind there anywhere either on the back or the side or over here?

A. No, sir, there was no hold.

Q. Well, if I understand you, you examined it for the purpose of ascertaining whether there was, you looked at it for the purpose of ascertaining whether

(Testimony of H. E. Wescott.)

there was anything of that kind there, didn't you?

A. Well, we were not looking for handles exactly. We was [198] wondering how a person could take a shower or even a bath in these rooms without some handle.

Q. Well, for the purpose of determining whether there was any handle on the wall?

A. Well, for no other reasons than just satisfying ourselves.

Mr. DAVIS.—I will bring that out, your Honor.

Q. Do you know Mr. Hutchins? A. Yes.

Q. How long have you known him?

A. Just about a year.

Q. Did you go down and visit that ship and that particular bath-room at the request of Mr. Hutchins? A. Oh, no, sir.

Q. Well, did you have a conversation with Mr. Hutchins about it?

A. Well, I knew he had been injured on it.

Q. Did you have any conversation about it?

A. No, sir.

Q. Why did you go down there?

A. Well, we just happened to decide to go down and look the boat over this day, Mr. Bicknell and myself.

Q. And you knew of the accident to Mr. Hutchins at that time? A. Yes.

Q. Mr. Hutchins live at your house?

A. He stopped there when he first came over.

Q. And you talked the thing over with Mr. Hutchins and then went down to the boat?

(Testimony of H. E. Wescott.)

A. Yes, after his accident I went down to the boat.

Mr. DAVIS.—All right, your Honor, then we will point out this particular bath-room.

The COURT.—That is all right. Mr. Wescott, you will meet **[199]** the party of us in front of the Bank of Hawaii this afternoon at 3:30 P. M.

Mr. DAVIS.—I am going to close the libellant's case, I think—I can do it by twelve o'clock—but will ask your Honor to sit until half-past twelve, until I finish it, so that we can get through with it.

Mr. WARREN.—I am advised that the doctor is on his way here, your Honor.

The COURT.—All right, take a short recess. **[200]**

AFTER RECESS.

Mr. WARREN.—I will have to call my witnesses out of order, your Honor. Call Mr. Metzler.

Testimony of W. H. Metzler, for Libelees.

Direct examination of W. H. METZLER, for libellees, sworn.

Mr. WARREN.—You have given your full name, have you?

A. Yes; William Hall Metzler.

Q. What is your occupation, Mr. Metzler?

A. Special Agent of the Great Northern Pacific Steamship Company.

Q. And were you employed in that capacity on board the "Great Northern" when that vessel made her trip here to Honolulu in the latter part of February of 1916, when Mr. Hutchins was a passenger?

(Testimony of W. H. Metzler.)

A. I was.

Q. And was injured by falling in a shower-room on the boat? A. I was.

Q. You know Mr. Hutchins, do you?

A. Yes, I know him by sight.

Q. Did you know him at that time by sight?

A. Yes.

Q. Do you know which shower-room or compartment that accident occurred?

A. No, I don't know which particular one, but I know it was on C deck.

Q. How many showers are there on C deck, Mr. Metzler? **[201]** A. Two.

Q. And how many—that is, two shower-rooms?

A. Two shower compartments.

Q. In one bath-room?

A. Yes, in one bath-room.

Q. The two compartments are in the one room?

A. Yes.

Q. After that accident did you make an inspection of both of these shower compartments?

A. I did.

Q. How soon after the accident?

A. I don't recall. When I heard about the accident I went down immediately, I think it was after dinner.

Q. On the same day? A. On the same day, yes.

Q. Did you make any examination of that shower-room with a view to taking note of the condition of it and its equipment? A. I did.

Q. Will you state to the Court what the condition

(Testimony of W. H. Metzler.)

of the two compartments, both of them, were, if there was any difference between them?

A. No, I didn't notice any difference. I tried the combination lever operating the hot and cold water, looked over the flooring and around the marble and everything looked in good shape to me.

Q. What other equipment is there in those compartments for a person to hold on to?

A. Grab-irons.

Q. Where are the grab-irons?

A. On the back slab. **[202]**

Q. On that occasion did you see any grab-irons?

A. I did.

Q. In each compartment? A. Both of them.

Q. Located where? A. On the back slab.

Q. Would you be able to recognize a photograph of either of these shower-rooms? A. I would.

Q. I will draw your attention to three photographs which are marked Claimant's Exhibits 1, 2 and 3, respectively, attached to the deposition of Mr. W. A. Scott, and ask you to look at those three photographs. You have now examined those three photographs? A. I have.

Q. Can you state whether or not they represent the shower-baths or either of them that you have examined?

A. 2 and 3 is the shower-baths on C deck. Exhibit 1 I don't know. There is no distinguishing feature about it. It might be one of the showers on B deck, they are all alike, but I know 2 and 3 are the two on C deck on account of this door here.

(Testimony of W. H. Metzler.)

The COURT.—You recognize exhibits 2 and 3 then as being photographs of the particular shower-bath on C deck that Mr. Hutchins is said to have fallen in?

A. Yes.

Mr. WARREN.—I understand you to say that you do not know whether Mr. Hutchins fell in this room shown on the right of this picture, or the compartment opposite? A. I do not.

Q. You identify this room as the one on the right? **[203]**

A. Yes.

Q. Was there at that time any difference between the compartment on the right here shown and the compartment on the left as refers to the grab-iron handle you have mentioned or indicated, and the pipes?

A. No; the only difference is there wasn't any soap-dishes there at the time; I made a particular note of soap-dishes; there wasn't any soap-dishes.

Q. The soap-dish is shown on exhibits 2 and 3 here; these have been hung on since? A. Yes.

Q. That is, since the accident? A. Yes.

Q. Did you take particular note at that time as to the presence of the handles in the shower compartment? A. I did.

Q. With what purpose did you go to that room?

A. For the purpose of examining the equipment, to see if there was any defects in the equipment.

Q. What, if anything, has that to do with your duties?

(Testimony of W. H. Metzler.)

A. Well, in the event of an accident I make a partial investigation with the doctor, the ship's doctor.

Q. State generally what your duties are on board.

A. Well, investigating all personal injuries and accidents and police duty, handling freight, that is, watching the freight.

Q. Police duty, you say?

A. What is it?

Q. Did you say police duty?

A. Police duty; yes.

Q. I want now to refer to exhibits 2 and 3, and will call your attention to the bar or rod across the compartment [204] at the top from which a curtain is suspended. State whether or not that was there at the time? A. It was.

Q. Looking at both of these exhibits 2 and 3, I will ask you to indicate to the Court if you can notice any difference between the compartments as they are shown by the photographs and as you examined it shortly after the accident, other than the installation of the soap-dishes?

A. No difference with the exception of the soap-dish.

Q. Absolutely? A. Absolutely.

Q. The compartment opposite on the left, any different from the one shown here—

A. There was none.

Q. —except that it is on the opposite side?

A. Opposite side.

Q. The water-pipes that are shown in these two photographs on the wall on the left, do you know

(Testimony of W. H. Metzler.)

whether or not the pipes that are shown are far enough from the wall to be—to permit an ordinary man's hand to go in behind and grab?

A. Yes, they are far enough to get your fingers between them,—behind them.

Q. Looking at these three pipes, where is the cold water-pipe?

A. Well, it is one of the two; this is the combination lever, and there is the mixer, the combination lever operates the two.

Q. One is the hot water and the other is the cold water? A. Yes.

Q. And the center pipe is the pipe conducting the water to [205] the shower? A. Yes.

Q. Do you know, Mr. Metzler, when those grab-handles were put in the shower compartments?

A. I don't know the exact date, but as I remember, it was two trips before this trip that Mr. Hutchins made.

Q. Do you remember how many trips the "Great Northern" had made to Honolulu that year, before this accident?

A. Three, I believe; I wouldn't say positively.

Q. Is this the third?

A. No, this would be the fourth; I wouldn't say positively unless I looked at my diary.

Mr. WARREN.—Cross-examine.

Cross-examination of W. H. METZLER.

Mr. DAVIS.—You had been talking to the captain about the grab-handles on the day of the accident, after it happened, didn't you?

(Testimony of W. H. Metzler.)

A. Not particularly about the grab-irons, I talked about the accident.

Q. You talked about the accident. Did you say anything about the grab-handles?

A. Not as I remember.

Q. You were examined as a witness before in this case, were you? [206] A. In Frisco.

Q. As to depositions, eh? A. Yes.

Q. Do you remember this question being put to you? (Reading:) When was the first time you remember talking to any officer of the ship or company about the grab-handles? Answer. The captain and I talked it over that day, the day of the accident. Remember having stated that?

A. Why, I remember stating that I talked to the captain. I think he was the first one I talked to about the accident. I don't recollect, though, talking about the grab-irons.

Q. Remember that question that was put to you?

A. It might have been the grab-iron.

Q. Is that the question and answer put to you?

A. I couldn't say.

Q. You don't remember about that, eh?

A. I don't remember that.

Q. Will you swear it was not put to you in that way?

A. No, I wouldn't swear it was not.

Q. Did you say anything to the captain about the grab-handles?

A. I think we did, yes; we both talked about the grab-irons.

(Testimony of W. H. Metzler.)

Q. That was on the day after the accident?

A. On the same day the accident occurred we talked about it.

Q. Mr. Metzler, what was your business before you were employed on the "Great Northern" as special agent and police officer?

A. I was special agent for the Great Northern railway.

Q. Yes, and before that where were you employed?

A. Captain of police of the Lehigh Valley Railroad Company. [207]

Q. And before that?

A. Pennsylvania Railway Company.

Q. Do you know a man by the name of Lefebre?

A. What is the name?

Q. Lefebre. A. I do not.

Q. You do not? A. No, sir.

Q. You never did know him?

A. Not that I recollect.

Q. Was you present—did you see a man by the name of F. G. Lefebre present when you gave your deposition in San Francisco?

A. Well, there was a gentleman there but I didn't know his name.

Q. He had been a steward on the steamship, eh?

A. Oh, no; there was no employee of the steamship company there when I testified.

Q. Is this your card? A. Yes.

Q. Look on the back; is that your writing?

A. Yes.

Q. Did you leave that card at Lefebre's—did you

(Testimony of W. H. Metzler.)

leave this card for Lefebre? A. Yes.

Q. He was a steward of the boat, anyway.

A. Yes, he was a steward.

Q. You left this card, eh, for him?

A. I left it at the Oakland Hotel, asking him to call.

Q. To call at your office as soon as possible?

A. Yes.

Q. What for? [208]

A. To question him regarding this accident.

Mr. DAVIS.—I see. We offer this card in evidence, your Honor.

Mr. WARREN.—It hasn't been connected in any way.

Mr. DAVIS.—I will connect it up. He left the card and stated for what reason. That is a police officer on the boat and I guess it is connected up sufficiently.

Mr. WARREN.—I will withdraw the objection. It is littering up the record.

Mr. DAVIS.—Did anybody accompany you when you went in that shower-bath on the day of the accident? A. No, sir.

Q. After it happened? A. No, sir.

Q. You went in alone? A. I did.

Q. Yes, and you talked this thing over with Mr. Relf in Portland, one of the officials of the steamship?

A. Why, he asked me about it some time after when I made a trip to Portland.

Q. Yes, and you talked it over with him?

(Testimony of W. H. Metzler.)

A. Not exactly. In a general conversation we talked about it though.

Q. Who is Mr. Relf? A. He is the claim agent.

Q. Claim agent of the Great Northern Steamship Company? A. Yes.

Q. The Northern Pacific Steamship Company, rather?

A. The Great Northern Pacific Steamship Company.

Q. He is the claim agent and you talked it over with him.

A. In a general conversation. He asked me something about [209] it, I don't recall, and—

Q. That was before the 23d of October, 1916, wasn't it, that you talked it over with Relf?

A. A short time before I testified at the hearing at Frisco.

Q. Exactly, before you gave your deposition. Now, how did you come to go to see this man Lefebre, or Lefevre, as you call him?

A. I understand that he was a witness in the case.

Q. Yes.

A. And there was some talk that Mr. Hutchins had secured employment for him at the Del Monte Hotel.

Q. Yes, and then you—

A. I understood that he would testify that there wasn't any grab-irons in the shower.

Mr. DAVIS.—That's not responsive, your Honor.

Mr. WARREN.—That is responsive to the question.

(Testimony of W. H. Metzler.)

The COURT.—I think it is all right, an explanation of what he heard. Of course I know it is not proof of the truth of what he heard but it is an explanation of why he went.

Mr. DAVIS.—All right, your Honor.

A. Well, I heard that Mr. Hutchins had secured employment for him at the Del Monte Hotel, and that he should have stated that there were no grab-irons in this particular shower at the time, and I went to see him in regards to that particular question because I had examined the showers and I know there were grab-irons there; in fact I examined all the showers on the ship.

Q. That's all you wanted to see him about?

A. That was all; yes. [210]

Q. But you didn't see him? A. I did not.

Q. No?

A. He called up several times, but I was too busy, I couldn't see him.

Q. Did Morris tell you he had told that man if he testified there were no grab-irons there he would have him in jail? A. No, sir.

Mr. WARREN.—I object, your Honor; that is incompetent, irrelevant and immaterial.

A. No, sir—Oh, pardon me.

Mr. DAVIS.—You saw him when you gave your deposition? A. I did not.

Q. You saw him when he gave his testimony?

A. I did not.

Q. You had gone before he gave his testimony?

A. I did not know he had given any testimony.

(Testimony of W. H. Metzler.)

Q. I see. You examined every shower-bath on all the decks, eh, on that day?

A. On B and C deck, and in the bachelor quarters.

Q. I suppose you examined them because you heard of this accident, didn't you?

A. More on account of the hot and cold water. We had some complaints about it not working just right.

Q. But you heard of the accident and then you went and examined them, eh? A. Yes, sir.

Q. Yes. Let me have that photograph, will you please? How far are these pipes separated? [211]

A. I don't know exactly.

Q. Well, as near as you can? A. Pretty close.

Q. Where is the hot-water pipe?

A. I don't know; one of these two on the side.

Q. Which one you don't know?

A. I think the one on the right; I don't know exactly.

Q. Well, a man visiting that shower-bath for the first time, the first time he ever visited it he would be liable to catch hold of the hot-water one, wouldn't he, as well as the others?

A. There's no reason to catch hold of the pipe.

Q. No, but Mr. Warren asked you if he could catch hold there; I mean a man visiting there for the first time would be liable to catch hold of the hot-water one? A. Yes, he might.

Q. And that would burn him, wouldn't it?

A. I don't know.

Q. Isn't it hot?

(Testimony of W. H. Metzler.)

A. I don't think it is as hot as that.

Q. Do you know that a man got his hand blistered in catching hold of that? A. No.

Q. You don't know whether it is so or not?

A. I do not.

Q. Do you know how far they are from the wall there? A. I couldn't say offhand.

Q. But pretty close up, ain't they?

A. You could get your fingers around all right.

Q. Did you try it? A. I don't recall. [212]

Q. No, you don't recall, but you think so, eh?

A. No need for it.

Q. You never tried?

A. I never tried to get my fingers in.

Q. The first one is the hot water?

A. I don't know.

Q. You don't know even which is the hot-water pipe? A. One of these two on the outside.

Q. But you don't know which one?

A. No, I don't.

Q. And neither did you ever try to get your fingers in there? A. Well, I may have tried that.

Q. Well, did you—you don't recall, Mr. Metzler?

A. No, sir.

Q. How long have you been in the employ of this Great Northern, Mr. Metzler?

A. Since January, 1914.

Q. On the steamship's articles? A. No.

Q. As a member of the crew? A. Yes.

Q. Yes, you would have to be. Now, will you be kind enough to inform me, is there a hospital room

(Testimony of W. H. Metzler.)

on board the "Great Northern"?

A. There is a laboratory there—

Mr. WARREN.—Are you making the witness your own?

Mr. DAVIS.—Yes.

A. There is a laboratory there that the doctor uses.

Q. Used as a hospital room?

A. Not exactly, no.

Q. What is it? A. Any patients that—

Q. Describe it to Judge Vaughan; describe the room.

A. Well, it has a sofa on one side, and he has medicines on [213] the opposite side.

Q. Any surgical instruments in there?

A. Why, he has two rooms. I don't know whether he has surgical instruments in this particular room or not.

Q. But he either has them in that room or in the room adjoining? A. Yes.

Q. Has he got bandages and all that kind of thing?

A. He is supposed to have.

Q. Eh? A. He is supposed to have.

Q. But does he have them?

A. I don't know that.

Q. Ever see them? A. Seen some; yes.

Q. Yes; and that is used when anybody gets injured, eh, isn't it, as a hospital room?

A. Why, yes; that's what it is there for.

Q. In turning on this—how do you turn on the hot water, do you know, from what place there? That handle there, does that turn on the hot or cold

(Testimony of W. H. Metzler.)

water, which one, here, this one.

A. It turns on both, you pull the handle—you pull that lever way over as far as it goes and gradually let it back until your hot and cold water is mixed.

Q. When it is first turned on it turns on the hot water?

A. Not necessarily; it may be cold. The best way is to turn it full around and then work it gradually back until you get what you want.

Q. You turn on the hot water with it?

A. The hot and the cold; they are on at the same time; you [214] use that lever to mix.

Q. That mixes it up, eh? I suppose if you don't turn it far enough there would be more hot than cold? A. Yes.

Q. If you only turned it a little ways I suppose it would be hot? A. Possibly, or maybe cold.

Q. Isn't there hot water in there all the time?

A. Not all the time; it might be ice cold.

Q. I mean when the fires are up and everything is the water very hot?

A. Hot water is always the same.

Q. What is the temperature of hot water?

A. I don't know that.

Q. But hot enough to scald a fellow, wouldn't it be, if he didn't put cold water in it?

A. If he turned on boiling hot water.

Q. The hot water alone and kept it on, wouldn't it scald you?

A. You couldn't turn the hot water on alone; it mixes.

(Testimony of W. H. Metzler.)

Q. The minute you touch it it mixes? A. Yes.

Q. It does? A. Yes, I never found it otherwise.

Q. Then it is perfectly safe to catch hold of it?

A. Yes.

Q. Didn't you testify a few minutes ago that there was a complaint that this water didn't mix properly?

A. Yes.

Q. And that the hot water—

A. That was due, perhaps, to not knowing how to regulate it. **[215]**

Q. You talked anyway—I want to get this straight. You talked to the captain of the "Great Northern," Captain Ahmen about this particular bath-room on the day after the accident?

A. The day of the accident.

Q. Yes, the day of the accident? A. Yes.

Mr. DAVIS.—That's all.

The COURT.—Mr. Metzler, is that what you referred to as the grab-iron?

A. Yes, sir.

Q. And that you say was there on the day of the injury? A. Yes.

Q. Shown also in this photograph No. 2?

A. Yes.

Q. How high from the floor was that?

A. Well, let's see; I should judge about four and a half or five feet.

The COURT.—That is all.

Mr. DAVIS.—When were these photographs taken, Mr. Metzler, do you know?

A. I haven't any idea, sir.

(Testimony of W. H. Metzler.)

Q. You haven't any idea, but they weren't taken until after the accident, were they?

A. I don't know that.

Q. You don't know where they were taken?

A. I do not.

Q. Or who took them? A. I do not.

Q. Neither the time or the place or the circumstances connected with them? [216]

A. No, sir.

The COURT.—If that is all, Mr. Metzler is excused. The Court will take a reces until 2:15 this afternoon.

Mr. WARREN.—I am perfectly willing to waive the afternoon session.

Mr. DAVIS.—So am I, your Honor.

The COURT.—Under the circumstances, then, there will be no afternoon session.

Mr. WARREN.—I understand the libellant's case is closed with the exception of one more witness of Mr. Davis?

Mr. DAVIS.—Maybe I'll have more; I don't know. I think we had better go on this afternoon, your Honor.

The COURT.—All right then, the Court will take a recess until 2:15 this afternoon, and notify your witnesses to be here at that time.

Mr. DAVIS.—Here is that card I introduced as Libellant's Exhibit "D."

The COURT.—All right. [217]

Honolulu, H. T., February 19, 1917.
2:15 P. M.

Testimony of John S. Ford, for Libelant

Direct examination of Mr. JOHN S. FORD, for libellant, sworn.

Mr. DAVIS.—What is your name, please?

A. John S. Ford.

Q. Are you the purser of the "Great Northern," Mr. Ford? A. Yes, sir.

Q. And were you such purser on the 18th day of February, 1916? A. Yes, sir.

Q. Now, is she a passenger ship? A. Yes, sir.

Q. Yes; well, now, how many first cabin passengers can she carry, is she allowed to carry?

A. About 540.

Q. 540, and how many second cabin passengers?

A. 104.

Q. And what is the other,—is there any steerage?

A. Third cabin.

Q. Third cabin also; you mean that is the steerage, eh? A. Yes, sir.

Q. How many steerage passengers?

A. I think our license allows about 180.

Q. 180, and how many second cabin?

A. 104. [218]

Q. Now, Mr. Ford, do you know whether there is a hospital room on board that vessel? A. Yes.

Q. How big is it? Give the Court the dimensions of it.

A. Well, it is an ordinary stateroom; I should imagine seven feet long and about six feet wide.

(Testimony of John S. Ford.)

Q. Is the doctor's office adjacent to that hospital room? A. Yes.

Q. Now, have you ever been in the doctor's room?

A. Yes.

Q. Constantly, frequently?

A. Well, quite often.

Q. Were you in there on the trip when you left San Francisco in February? A. Yes, sir.

Q. Now, had he surgical instruments in that room at that time?

A. Well, I couldn't say about his surgical instruments; he is supposed to have a full doctor's supply.

Q. Yes, and do you know whether he had cotton or bandages on board in there? A. Yes.

Q. Oh, yes, he did, and as a rule does he take any injured passengers in this hospital room?

A. Yes, sir.

Q. Who was the doctor on board on that particular trip, leaving San Francisco on the 14th of February, 1916? A. Doctor Macadory.

Q. Doctor Macadory, and where is he now?

A. Well, I understand that he is on the Island of Hawaii.

Q. On the Island of Hawaii, in this territory? [219]

A. In the Territory of Hawaii.

Q. Now, Purser, you keep the books and accounts for the steamship "Great Northern"?

A. Yes, sir.

Q. And what salary does Doctor Macadory draw?

A. His salary is $75.00 per month.

(Testimony of John S. Ford.)

Q. And his name was on the ship's articles as the ship's surgeon? A. Yes.

Q. And was Captain Ahmen on board this vessel at that particular time? A. Yes, sir.

Q. Do you know Mr. Hutchins?

A. Well, I know Mr. Hutchins to see him; yes.

Q. Well, was he a passenger on board that trip, do you remember that? A. Yes.

Q. A first-class passenger?

A. Yes, he was a first-class passenger.

Q. First cabin passenger, and how many tons burthen is the steamship "Great Northern"?

A. Well, gross tonnage is 8,255, net 4,184.

Q. She is a modern steamship?

A. Modern steamship; yes.

Q. Are there any hospital stewards on board there? A. Hospital stewards?

Q. Yes.

A. No, sir; only the doctor's, only the surgeon's.

Q. How many stewards, ordinary stewards, are there? [220]

A. Well, what we call in the steward's department, there is 135 of them.

Q. How many has the doctor got—has he some assistants among these stewards?

A. Yes, he has a room boy himself.

Q. Can he call on any—

A. He can call on anybody on the ship.

Q. He can call on anybody on the ship, and he generally takes any injured person into this hospital?

A. Yes.

(Testimony of John S. Ford.)

Q. Is it supplied with a bed?

A. Supplied with a bed, yes; a bunk we always call it on the ship.

Q. I mean a hospital bed fixed up a little different than the others? A. Just a bunk.

Q. Fitted up a little different, isn't it, from the ordinary stateroom?

A. Yes, different altogether.

Q. Exactly, fitted up as a hospital room?

A. Yes.

Mr. DAVIS.—You can take the witness.

Mr. WARREN.—No questions.

The COURT.—Stand aside. [221]

Testimony of Dr. J. G. Harrington, for Libelant.

Direct examination of Dr. J. G. HARRINGTON, for libellant, sworn.

Mr. DAVIS.—What is your name, please?

A. Doctor John George Harrington.

Q. How old are you, Doctor? A. 32.

Q. How old? A. 32.

Q. Are you a doctor of medicine holding a diploma? A. What?

Q. Are you a doctor of medicine holding a diploma? A. I am.

Q. From what school?

A. College of Physicians and Surgeons, San Francisco.

Q. San Francisco, and how long have you been practicing medicine and surgery, Doctor?

A. Six years this coming September.

(Testimony of Dr. J. G. Harrington.)

Q. Are you the present doctor on board the steamship "Great Northern"? A. I am.

Q. Are you in charge of the hospital room that has been spoken of by the purser? A. I am.

Q. Yes; now, what equipment have you on there in the way of bandages and surgical instruments, without going over the whole stuff? I simply want to know if there are bandages there in case of broken arms and limbs.

A. We are equipped to handle any emergency that may come along.

Q. Exactly, that's a fair way to put it. Then specifically [222] to answer my question, you have bandages on board? A. Yes, sir.

Q. For immobilizing, for instance, a broken arm?

A. Yes, sir.

Q. You have, also, I suppose, all kinds of adhesive plasters for such purposes? A. Yes, sir.

Q. And have you surgical instruments there too?

A. Yes, sir.

Q. And is this hospital room fitted up so as in a case of emergency you can keep a man there you would have to work with, I mean to keep him there for a few hours to look after him? Long enough to render him proper attention in that place?

A. Long enough to render him proper attention in that place.

Q. That's fair, Doctor, either medically or surgically? A. Sir?

Q. Either medically or surgically?

A. Yes, either medically or surgically.

(Testimony of Dr. J. G. Harrington.)

Q. Have you other assistants to help you, for instances, nurses of any kind?

A. I don't know as they are graduate nurses, but I can call on the stewardesses.

Q. They are generally proficient in that?

A. They do as they are told.

Q. You have had them as assistants?

A. Never had any occasion.

Q. Never had any ocasion up to the present time, but you know they are there for that purpose? [223] A. Yes.

Mr. DAVIS.—That is all I have to ask the doctor. Oh, this is your first trip, Doctor? A. Yes.

Mr. DAVIS.—Cross-examine.

Mr. WARREN.—No questions, your Honor, but I would like to say, your Honor, in connection with the last witness, I would like to have him recalled and ask him a few questions.

The COURT.—All right. Call Mr. Ford. [224]

Testimony of John S. Ford, for Libelant (Recalled—Cross-examination).

Cross-examination of JOHN S. FORD (Recalled).

Mr. WARREN.—When you were asked with reference to the compensation of the doctor, you stated that the salary of the doctor is $75.00 per month. A. Yes.

Q. Is there anything else connected with the remuneration of a doctor on board, that you did not tell?

(Testimony of John S. Ford.)

A. Well, he is allowed to charge any passenger that comes aboard—

Mr. DAVIS.—I object to that, your Honor, as incompetent, irrelevant and immaterial, not tending to prove or disprove any of the issues in this case, and not subject to cross-examination and not brought out on direct examination, wholly incompetent and irrelevant for any purpose.

The COURT.—I don't know that it really amounts to much, but as a matter of fact you asked him what salary he got as the ship's doctor, and it appears that he really omitted to state this other. I don't think it amounts to anything one way or the other but I will permit the witness to answer.

Mr. DAVIS.—To which ruling we respectfully except and assign the same as error.

Mr. WARREN.—And how about the meals of the doctor—does he pay for them or does he get them in addition?

A. No, those are included with his salary.

Mr. DAVIS.—Now, Mr. Ford, isn't this payment on the part of [225] passengers a voluntary one?

A. Well, it is voluntary; yes.

Q. He is paid by the ship to look after the passengers under the direction of the captain? A. Yes.

Q. And any money he gets outside of that is voluntary?

A. Well, he is allowed to charge them.

Q. But it is voluntary? A. Voluntary.

Q. Yes, they don't have to pay?

A. He can render a bill to them.

(Testimony of John S. Ford.)

Q. Can you swear that they have to pay him for services on that vessel, the passengers?

A. Well, they should if he renders a bill.

Q. Will you undertake that they have got to pay him? A. Yes, sir.

Q. You do swear to that, do you?

A. Why sure, they should pay him.

Q. Ever know of a case of that kind where he forced a passenger to pay for medical services?

A. No, sir.

Mr. DAVIS.—No, and that's all.

Mr. WARREN.—Let me ask you, further, then, in connection with the engagement of a doctor and his presence on board, are these terms upon which the doctor's services are rendered to passengers included in any way in the terms of the ticket or passage, so that the passenger is advised whether or not the doctor may charge?

Mr. DAVIS.—I object, your Honor; he is trying to introduce secondary evidence, if there is any such a thing contained [226] in the ticket he must produce the ticket.

Mr. WARREN.—I will withdraw the question, your Honor.

Q. Will you state generally the terms under which a doctor is employed by the ship, what his perquisites are under the rules of the ship?

Mr. DAVIS.—Objected to as incompetent, irrelevant and immaterial, not tending to prove or disprove any of the issues in this case, and further, that the duties cast upon the ship under this statute states

(Testimony of John S. Ford.)

nothing about remuneration.

Mr. WARREN.—I would like to make my question apply to first-class passengers, your Honor.

Mr. DAVIS.—I don't care who it is, any passenger.

The COURT.—I understand, Mr. Davis, that a ship has no right to violate the law, to violate its duty under the law, but at the same time the question is what the compensation of the doctor was; that is the question, but I will allow the whole compensation to be stated, what compensation he has received. Objection overruled.

Mr. DAVIS.—To which ruling we respectfully except and assign the same as error.

The COURT.—All right. The witness will state the full terms of the contracts, of compensation of the doctor.

A. Well, he is on the shipping articles at $75.00 per month. Of course, he gets his meals and his room. Then any passenger that comes on board with any chronic complaint if he treats them he is allowed to charge them.

Q. That is the full term of his contract?

A. Yes. [227]

Mr. DAVIS.—Have you got a copy of the shipping articles of this particular voyage?

A. Of this particular voyage?

Q. No, under whose authority is that done?

A. The shipping articles?

Q. No, no; what authority is there to allowing the doctor to charge, who allows him to charge?

(Testimony of John S. Ford.)

A. The company.

Q. Oh, the company does! I want to make that clear. Well, the company can't make the laws of this country, thank God, or any other corporation. That's all.

Mr. WARREN.—That is all.

Mr. DAVIS.—That is the libellant's case, if your Honor please.

Mr. WARREN.—Now, your Honor, that the record may contain a motion that necessarily is more or less out of order in the way the case has been heard, I want to have on the record a motion to strike from the record in this case all of the testimony of the witnesses adduced by the libellant—

Mr. DAVIS.—With the exception of this man's testimony, of Mr. Westcott, who is going down at half-past three to examine that shower-bath.

Mr. WARREN.—I don't want that out of the record. That is not the object of my motion. I move to strike all of the testimony adduced by the libellant in this case coming to the fact that the doctor on this particular case was negligent or incompetent on the ground that the case has been closed without having been supported by [228] evidence or any evidence whatever, that the company in having engaged this doctor did so with any knowledge or even suspicion of any incompetency on his part, not hereby admitting any proof of incompetency but taking the position that even though under the law the physician on board is negligent, unless it is shown that he was engaged by the company with knowledge of such in-

(Testimony of John S. Ford.)

competency or retained with knowledge of incompetency and thereafter he mistreated a case, there is no legal responsibility on the part of the company for neglect or for incompetence of a person believed to be competent in good faith at the time of the engagement. This for the purposes of the record. The matter has been pretty largely argued already.

Mr. DAVIS.—And I want to say that the motion is entirely unsupported by the law in this case. (Argues.)

Mr. WARREN.—Can we not with all of these witnesses here proceed, and do our arguing afterwards? I respectfully ask to be allowed to proceed with the case.

The COURT.—Mr. Warren has made a motion to strike the testimony out. I will say that I am not prepared to rule on that motion this afternoon, for the reason that I am not fully advised as to the construction of this particular statute. I think it would be advisable to go ahead with the evidence in the case. It is very evident to me that this statute having been on the books since 1882 must have received some consideration from the Court, and I would like to look for decisions, and I will rule on it as soon as I read them. [229]

Mr. WARREN.—In behalf of the claimant, your Honor, I will first call Mr. J. B. Morris.

The COURT.—Yes. Of course, the record shows that your motion has been made and will be taken under advisement.

Testimony of J. B. Morris, for Libelee.

Direct examination of J. B. MORRIS, for libellee, sworn.

Mr. WARREN.—Your name is John B. Morris?

A. Yes, sir.

Q. And how old are you? A. 45.

Q. And you are the chief engineer of the steamship "Great Northern"? A. Yes, sir.

Q. And were you employed on that vessel in that capacity on the trip leaving San Francisco on the 14th of February, of 1916? A. Yes, sir.

Q. Do you recall that as the trip on which Mr. C. J. Hutchins sustained an accident in the shower-room? A. Yes, sir.

Q. How long have you been a chief engineer holding a certificate as chief?

A. About eleven and a half years.

Q. On what vessels or lines have you served in that capacity?

A. Pacific Mail, San Francisco and Portland, and our own company.

Q. Prior to that time what service did you have as an [230] engineer of any kind?

A. Well, I have been assistant engineer for probably four years.

Q. What certificates or licenses do you hold?

A. I hold an unlimited American and British certificate.

Q. For steam vessels?

A. Chief engineer; yes, sir.

(Testimony of J. B. Morris.)

Q. Are you acquainted with the shower-room or rooms on the "Great Northern" on C deck?

A. Yes, sir.

Q. How many shower compartments are there in that shower-bath room on C deck? A. Two.

Q. Do you know in which of these Mr. Hutchins had his accident?

A. No, sir; I don't remember which one it was.

Q. Is there any difference between the two?

A. None at all.

Q. One is—

A. One is on the port side and one on the starboard side, facing each other.

Q. Facing each other? A. Yes, sir.

Q. Would you be able to recognize a photograph of either of these shower-rooms? A. Yes, sir.

Q. I will call your attention to three photographs which are on file as Claimant's Exhibits 1, 2 and 3 in connection with the deposition of Mr. Walter A. Scott in this case, and I will ask you to look at them.

[231]

Mr. WARREN.—While the witness is looking at those, your Honor, I would like to formally offer in evidence at this time, my case having opened, the deposition of Mr. Walter A. Scott, the deposition of William Paul Metzler,—no, he has testified.

The COURT.—Mr. Metzler has testified, Mr. Scott has not.

Mr. WARREN.—H. K. Relf we read this morning. In fact, inasmuch as it is understood that these depositions will be considered as read unless specific

(Testimony of J. B. Morris.)

objections are made, I would like to offer all of the depositions taken under the commissions with the exception of those where the witnesses called in person.

The COURT.—It being understood this morning that counsel on either side can object to specific evidences to be pointed, and unless the same are pointed out they will be considered as waived. The testimony is all considered as in.

Mr. WARREN.—Mr. Morris, you have now examined those three photographs referred to?

A. Yes, sir.

Q. Can you state whether or not those are correct representations of the right-hand shower-bath room on C deck? A. Yes, sir, that is the port side.

Q. On the port side? A. Yes, sir.

Q. There? A. Yes.

Q. Will you state whether or not in your examination of these photographs you can see anything about them indicating appliances or equipment of any kind shown by that photograph that was not there on the trip and the day when Mr. Hutchins sustained his injury? [232]

A. That is exactly as they were at that time.

Q. I will call your particular attention to what appear to be handles, or grab-irons, at the back wall of the shower compartment in each of these pictures.

A. Yes, sir.

Q. Can you state of your own knowledge whether or not these grab-irons were there on the day that Mr. Hutchins sustained that accident?

(Testimony of J. B. Morris.)

A. Yes, sir.

Q. Will you please state how you,—what means of knowledge have you in that regard?

A. By taking a look at them the following morning.

Q. You went in there for what purpose?

A. Mr. Hutchins had told me the evening before that he had slipped and hurt his shoulder, and I just took a look in there, not thinking he was seriously hurt at all, and I just took a look in the place.

Q. Did you take particular pains to notice whether or not there were handles in that compartment?

A. Well, I knew there was handles there; yes, sir.

Q. Did you look for them at that time?

A. Well, it wasn't necessary to look at them because they have been put in some time before.

Q. Do you know when they were put in?

A. Yes.

Q. Will you state?

A. They were put in there on the 24th of January.

Q. What trip was that—any particular circumstance connected with that trip that fixes the matter in your mind? [233]

A. In looking up the bills afterwards, as I remember, is what fixed that date in my mind.

Q. But otherwise your knowledge of it is from your own inspection of the shower-room—

A. Yes, that morning, that following morning.

Q. You say that Mr. Hutchins told you that he had slipped in the shower-room. Did Mr. Hutchins make any statement to you as to how he slipped or what had caused that accident?

(Testimony of J. B. Morris.)

A. Yes, he told me he had stepped on the rounding of the base.

Q. Just describe that particularly as you understood it from him, what he said to you.

A. He said that in stepping in the shower he had stepped on the rounding of the base and also stated at that time that they were not properly built, that instead of being round they should be square.

Q. Will you please take any one of those pictures, those photographs, and see if you can show us just what rounding you refer to and what rounding you know is referred to by Mr. Hutchins.

A. This is the rounding. I understood it would be in this corner here.

Q. Describe it the best you can so that it will appear in the record.

A. The rounding of the front of the base on the inside is what I understood he meant.

Q. Will you point out—

A. He said he stepped in there and stepped on the rounding.

Q. Will you please take a pencil and mark on the rounding on the back side of the basin the portion referred to as [234] portion, as to having been stepped on on the front side?

A. Just opposite the cross in that picture.

Q. Give the statements made by Mr. Hutchins just as particularly as you can.

A. Well, that is the only thing that Mr. Hutchins mentioned to me. He didn't mention any handles or any method of holding on at all, just the fact that

(Testimony of J. B. Morris.)

that base was built with a round corner and it should have square corners.

Q. He used that word corners as indicated?

A. Corners, yes, sir.

Q. Did he say anything to you to indicate whether he was in the shower-room entirely, or entering, or how?

A. From what I understood him to say was as he stepped in there he slipped, his foot slipped on that rounding.

Q. Now, will you please take note of the pipes which appear on the left-hand wall of that compartment and describe what they are?

A. There is the hot and cold water pipe, that meets below and continues on as a mixer of the hot and cold water there, and the lever and valve, a valve with a lever attached to it that opens one or the other to vary the degree of the temperature of the water, of the hot or cold water, and that pipe extends from that valve up above to the shower above.

Q. How far are these pipes from the wall?

A. I should say they were two inches and a half.

Q. Would you say there was room behind the pipes for a man to get his hand in?

A. Plenty of room. [235]

Q. Which is the hot and which is the cold pipe?

A. I wouldn't be sure of that right now.

Q. What is the size of that floor of the basin in the shower compartment?

A. It is about two and a half feet square.

Q. That is including the room?

(Testimony of J. B. Morris.)

A. Including the room, yes.

Q. Now, inside of the basin how large is that compartment?

A. I would say that it would be three inches less.

Q. What is the grade of the floor in the bottom of the compartment?

A. There is a slope toward the center to drain off.

Q. About how much is that?

A. Oh, I should say a half an inch.

Q. Will you please describe from your knowledge of the compartment what facilities there are in that compartment for a person using the same, to support himself?

A. Well, first is the handles, the grab-bars.

Q. Will you indicate that in the picture?

A. Yes, sir, here they are right here. First is the handles, which is the only thing intended to be used for that purpose.

Q. You are now referring to exhibit 2?

A. Yes, sir.

Q. And then?

A. Then there are these curtains which are put up there strong enough to hold the weight of a person provided they should fall, one could still grab the curtains. Then they could grab the sides of the shower, this [236] marble side.

Q. A person inside of the compartment would be able to help himself?

A. There is two more ways of grabbing.

Q. Yes. Go ahead.

A. He could grab the side of the marble slab, and

(Testimony of J. B. Morris.)

then you could grab that pipe, either of these pipes here, or with your left hand you could grab that door knob.

Q. Assuming a person to be inside of the shower compartment would he be able by grabbing hold of—

A. There would be four of them, yes, sir, the wall, the curtain, the grab-bar or the pipes.

Q. Once inside of the compartment could he get any assistance from the edge of the wall?

A. Yes, sir.

Q. Provided he had time? A. Yes, sir.

Q. The base of that compartment or basin is made of what material? A. Tiling, porcelain.

Q. Inside of the compartment porcelain?

A. Yes, sir, porcelain.

Q. How does that porcelain differ in any way from the porcelain used in the ordinary porcelain bath-tubs? A. It is the same.

Q. From your experience in travelling on ocean-going steamers have you ever seen shower facilities fixed over a bath-tub?

Mr. DAVIS.—Don't answer that question. I object on the grounds that it is incompetent, irrelevant and immaterial, [237] not tending to prove or disprove any of the issues in this case, and is highly improper.

The COURT.—I don't see, Mr. Warren, how that is relevant to the facts in this case.

Mr. WARREN.—I will change the question.

Mr. DAVIS.—I want your Honor's ruling on it.

The COURT.—I will sustain the objection.

(Testimony of J. B. Morris.)

Mr. WARREN.—On how many different passenger steamers have you travelled, Mr. Morris?

A. You mean as an officer, as an officer of the ship?

Q. Yes. A. Probably seventeen.

Q. Any of these fitted with shower arrangements of any kind?

A. No, sir, except—in the shower itself.

Q. I am speaking now of any means of taking a shower.

A. Oh, yes, the shower is arranged over the bath-tubs.

Q. Running into the bath-tub? A. Yes.

Q. Bath-tubs of what kind?

A. The ordinary bath, the ordinary bath-tub.

Q. Of what material? A. Porcelain.

Q. Have you in your experience given attention to the matter of equipment and bath-room facilities on board of vessels where you have served as an officer? A. Yes, sir.

Q. In the matter of furnishing them with equipment, their construction? A. Yes, sir.

Q. And in the matter of selecting the appliances to be installed? A. Yes, sir. [238]

Q. And have you had occasion in that work to give consideration to the matter of safety facilities for persons using the installations? A. Yes.

Q. Have you in that way given consideration to the point of comparative safety of one form of shower appliances as compared with other forms of

(Testimony of J. B. Morris.)

shower appliances so far as the safety of the passenger is concerned?

A. There would hardly be any difference. In good practice there is one certain way.

Q. Well, have you considered that?

A. Yes, sir.

Q. In the matter of the installation of shower compartments as on the "Great Northern" indicated by these photographs of the claimant?—

A. Yes, sir.

Q. —the form of which appears in the photographs, how in your judgment does that form of basin compare with the ordinary porcelain bathtub—

Mr. DAVIS.—I object; that is incompetent, irrelevant and immaterial.

Mr. WARREN.—Let me finish my question.

Mr. DAVIS.—Sure.

Mr. WARREN.— —from the standpoint of comparative safety of one over the other?

Mr. DAVIS.—I object to it, it is incompetent, irrelevant and immaterial, not tending to prove or disprove any of the issues in this case, and is highly improper.

Mr. WARREN.—One of the allegations in this complaint is that the thing is not modern, not properly equipped and [239] constructed, and we have the right to show and prove how this construction compares with other construction and show what attention has been given to safety facilities and just what is installed by a person experienced, and I sub-

(Testimony of J. B. Morris.)

mit that this witness has qualified himself to give an opinion upon the comparative safety of different appliances of shower compartments.

Mr. DAVIS.—And I submit it is not evidence and has nothing to do with the case.

The COURT.—I think the question is whether or not this particular bath-room is safe, or had provision of safety for the room with the exercise of the proper care required. It wouldn't make any difference whether the ordinary bath-tub was an unsafe method or not. The fact that it might be dangerous and unsafe method of taking a shower-bath to have it in a bath-tub would not relieve the negligence in this case, if it was negligence, it is not a question of comparing other methods of making arrangements, but the question is whether or not this method was or had sufficient provision for safety. Taking a shower-bath in an ordinary bath-tub wouldn't render this any less unsafe, if it were unsafe—

Mr. DAVIS.—I move all the evidence be stricken out on that point.

The COURT.—He has not answered anything on this.

Mr. DAVIS.—I mean before this.

The COURT.—You can examine him fully in regard to the safety of this particular bath-room or this particular method, or what methods were provided for the safety of [240] the passengers, if he is qualified as an expert in these things, as to his opinion as to the safety of them.

Mr. WARREN.—I will withdraw the question.

(Testimony of J. B. Morris.)

Q. Calling your particular attention to what you have marked upon the photograph as a cross (X) as indicating the corner mentioned by Mr. Hutchins where his foot slipped, can you state just about how near to a right angle that corner really is,—in other words, what is the arc?

A. Probably one and a half inches, that would be three inches, a three-inch circle. The radius is about an inch and a half.

Q. And from them the slope of the floor is about a half an inch to the center?

A. A half an inch to the center; yes.

Q. How wide is the drain at the center of the floor in the bottom? The diameter?

A. It has to be sloped because the ship might be rolling and rolls everything to the center—

Q. I am asking about the drain in the center; what diameter is it?

A. I would say the strainer is probably three and a half inches in diameter. The pipe leading from it would probably be one and a half inches.

Q. What opportunity, Mr. Morris, if any, would a person have in using that bath to use the facilities which you have described and thereby prevent falling or slipping?

A. Well, it is right before them.

Q. What?

A. It is right before them, they can see with their eyes. [241]

Q. What about light there?

A. Well lighted.

(Testimony of J. B. Morris.)

Q. Things inside of the compartment being readily visible? A. Yes.

Q. To your observation, or in your experience is there anything about that shower-bath that would be likely in your judgment to contribute to a person's slipping or falling?

Mr. DAVIS.—Don't answer the question. I object to that as being highly improper and calling for a conclusion of the witness and absolutely improper. Your Honor has got the dimensions and the condition of it and it is for you to decide that and not this witness, he has no right to do it.

Mr. WARREN.—I will withdraw the question.

Q. In your opinion, Mr. Morris—

Mr. DAVIS.—Wait a minute; his Honor hasn't ruled on that yet.

The COURT.—Proceed with the examination, gentlemen; withdrawn.

Mr. WARREN.—In your opinion, Mr. Morris, is that shower compartment so equipped and placed that it may be used for showers without danger?

Mr. DAVIS.—I object, your Honor, for the same reasons, absolutely calling for a conclusion of the witness.

A. I looked after the building of it.

The COURT.—Of this shower, these showers?

A. Of the "Northern Pacific."

Q. The "Northern Pacific" shower-baths?

A. Yes, sir.

Mr. DAVIS.—That is the first time it has been

(Testimony of J. B. Morris.)

put on a ship, shower-baths, what right has he to say anything about it? [242]

The COURT.—At the same time he qualifies as an expert in building these things, and therefore qualifies as a person who is entitled to give his opinion, which the Court may or may not take. I think it is admissible testimony.

Mr. DAVIS.—Respectfully except to your Honor's ruling and assign the same as error.

The COURT.—All right.

A. I would like to hear the question again.

Mr. DAVIS.—Will your Honor allow the exceptions?

The COURT.—Yes.

(Last question read as follows: In your opinion, Mr. Morris, is that shower compartment so equipped and placed that it may be used for showers without danger?)

Mr. DAVIS.—I submit it is leading and suggests an answer.

A. Yes, sir.

The COURT.—On that ground the objection is sustained, it is leading.

Mr. WARREN.—In your opinion, Mr. Morris, what is your opinion as to the condition of that shower compartment with respect to safety or danger of its being used for showers?

Mr. DAVIS.—I object to the question on the same grounds, your Honor.

The COURT.—Overrule the objection.

(Testimony of J. B. Morris.)

Mr. DAVIS.—To which ruling we respectfully except.

The COURT.—Allowed.

A. Yes, I think it can be used with perfect safety.

Mr. WARREN.—Why?

A. Because every means I would know of has been provided for.

Q. Have you in your experience known of any shower-room [243] or compartment that had any other facility or device which you have known or heard of that is absent from this particular compartment? A. No,—

Mr. DAVIS.—Absolutely incompetent, irrelevant and immaterial, it has nothing to do with this case at all, what he knows about others. He can speak about this, he can give his opinion, and that is as far as your Honor will allow him to go. He is now going into something else. You would think that he was on all the steamships that ply the ocean, that boundless deep.

The COURT.—I think the question is permissible. Overrule the objection.

Mr. DAVIS.—To which ruling I respectfully except and assign the same as error.

The COURT.—Understand the question, Mr. Morris?

A. I would like to have it read again.

(Last question read.)

A. No, I never have.

Mr. WARREN.—Referring back to that conversation which you had with Mr. Hutchins, aside from

(Testimony of J. B. Morris.)

his having mentioned the fact that he considered that the corner should have been square instead of round, did you discuss anything else, any other feature of the shower compartments?

A. No, sir; none whatever.

Q. Do you know, Mr. Morris, since you have travelled on the "Great Northern," how many passengers she has handled?

A. Yes; I think Captain Ahmen and I figured it up one time.

Mr. DAVIS.—That has been asked and answered as to how many [244] passengers she carried. That is in evidence.

The COURT.—As to how many passengers she carried at one time, not how many she has carried.

A. I think she has probably carried eighty thousand passengers.

Mr. DAVIS.—Wait a moment; that don't answer the question. It is incompetent, irrelevant and immaterial, not tending to prove or disprove any of the issues in the case. I don't care how many passengers she carried, it is how many she carried on this particular trip that we are concerned with in this action, not the total number. That is absolutely a waste of time, and is incompetent for any purpose.

The COURT.—Objection overruled.

Mr. DAVIS.—To which ruling I respectfully except and assign the same as error.

A. I think the ship has probably carried eighty thousand passengers since she was built.

Mr. DAVIS.—I move to strike the answer out,

(Testimony of J. B. Morris.)

probably carried eighty thousand passengers is not evidence in the case.

The COURT.—Motion denied.

Mr. DAVIS.—To which I respectfully except.

The COURT.—Exception allowed.

Mr. WARREN.—Do you know how frequently the shower-baths are used on board the ship?

Mr. DAVIS.—I object, incompetent, irrelevant and immaterial, not tending to prove or disprove any of the issues in this case.

The COURT.—Objection overruled.

Mr. DAVIS.—To which ruling I respectfully except. [245]

The COURT.—Exception allowed.

Mr. DAVIS.—All right.

A. Continuously used, people waiting for them.

Mr. DAVIS.—I move that part of the answer be stricken out, people waiting for them. It is not responsive to the question.

The COURT.—Denied.

Mr. DAVIS.—To which I except, your Honor.

The COURT.—Exception noted and allowed.

Mr. WARREN.—Has any complaint been made to you as an officer of the company, as to the manner of construction or the condition of the shower-baths prior to this complaint made to you by Mr. Hutchins that you have stated?

Mr. DAVIS.—I object, your Honor; that is incompetent, irrelevant and immaterial, not tending to prove or disprove any of the issues in the case.

The COURT.—Overruled.

(Testimony of J. B. Morris.)

Mr. DAVIS.—To which I respectfully except. It is not certain as to place, time or circumstance.

The COURT.—Objection overruled, exception allowed.

A. None.

Mr. DAVIS.—And I move the answer be stricken out for the same reason.

The COURT.—Overruled.

Mr. DAVIS.—I take exception to the Court's ruling.

The COURT.—Exception allowed.

Mr. WARREN.—From your observation and experience which you have mentioned, will you state whether or not in your opinion this bath is safely and properly constructed as [246] you conceive could be done.

A. Yes, sir.

Mr. DAVIS.—I object; it's leading and suggestive; he has already given his opinion, and it has been asked and answered and beyond that he can't go.

The COURT.—I think it is leading. I will sustain the objection. That has been covered in a previous question.

Mr. WARREN.—All right.

Q. Is the matter of safety, of appliances of that kind, one which comes under your official observation? A. Yes, sir.

Q. Do you make inspections of the shower-baths on board of vessels regularly?

A. No, sir, I do not, but I have a man that does.

(Testimony of J. B. Morris.)

Q. In this particular shower compartment you did inspect after the accident—

Mr. DAVIS.—I object on the ground that it is leading, in this particular compartment you did inspect.

Mr. WARREN.—After the accident.

Mr. DAVIS.—Wait a minute.

The COURT.—The objection that it is is leading is sustained. He has testified to all of that already.

Mr. WARREN.—If, Mr. Morris, a shower compartment of this character were furnished with a rubber mat in the bottom of the basin, what in your opinion would be the effect of that with regard to safety?

Mr. DAVIS.—I object to that as immaterial; it is incompetent and irrelevant, no mat being there or anything.

The COURT.—Is there a complaint that there was no mat there? [247]

Mr. WARREN.—Yes, your Honor; that is one of the allegations of the complaint.

The COURT.—That makes it material. Overrule the objection.

Mr. DAVIS.—Withdraw the objection.

A. I think were a rubber mat there it would be dangerous.

Mr. WARREN.—Why?

A. Because if one were to rub themselves down with soap, and his feet be soapy, he would have a tendency to slip and slide on rubber.

Q. More so than on porcelain? A. Yes, sir.

(Testimony of J. B. Morris.)

Q. Referring, Mr. Morris, to the condition of the weather on the day of the accident, the condition of the weather and sea on the morning of the accident, the morning of the 18th of February, can you tell us what that was?

A. I think the ship was rolling quite a little.

Mr. DAVIS.—I object to what he thinks. I move it be stricken out.

Mr. WARREN.—Is that to the best of your recollection?

A. Yes, sir.

Mr. DAVIS.—Wait a minute, I moved that be stricken out. This is an important matter whether the ship was rolling; I object to that and move it be stricken out. What a man thinks is not evidence in a court of admiralty.

The COURT.—I understand by the expression that the witness simply was giving his thought, his best recollection of what happened. I will take the witness' statement not to be a positive statement that it was rolling. He does not state positively that it was rolling but I understand by his expression that that is his impression now.

Mr. DAVIS.—That would be a nice thing to go to the jury on. [248] He thinks it was rolling. It either rolls or it wasn't rolling; he either knows or he doesn't know.

The COURT.—Overrule the objection.

Mr. DAVIS.—To which ruling I respectfully except.

The COURT.—Allowed.

(Testimony of J. B. Morris.)

Mr. DAVIS.—And I assign the same as error.

The COURT.—Proceed with the examination.

Mr. WARREN.—Mr. Morris, do you know a man by the name of Francis G. Lefebre?

A. Yes, sir.

Q. When did you know him?

A. He was my boy for some time on the "Great Northern."

Q. Your boy on the "Great Northern"?

A. Yes, sir.

Q. Do you remember having a conversation with him about the end of March, 1916, on board the steamship "Great Northern" when she was at Honolulu with relation to the shower-bath Mr. Hutchins was using—had used? A. No, sir.

Q. Did you at any time in Honolulu or elsewhere go with Lefebre to the shower-room for the purpose of ascertaining whether or not any handles were in there? A. No, sir.

Mr. DAVIS.—One moment, Mr. Warren. It is now nearly half-past three.

The COURT.—Yes, we have an appointment with the witness at half-past three. How long will it take you to finish with this witness?

Mr. WARREN.—I think I can finish in a few minutes. However, it is three-thirty. [249]

The COURT.—We will suspend the examination of this witness now and take it up to-morrow morning. Adjourn court until to-morrow morning at nine o'clock. [250]

In the United States District Court, in and for the Territory of Hawaii.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," etc.,

Libellees.

Honolulu, H. T., Tuesday, February 20, 1917, 9:00 A. M.

Testimony of H. E. Wescott, for Libelant (Recalled).

Direct Examination of H. E. WESCOTT (Recalled.)

Mr. DAVIS.—You went aboard the "Great Northern" yesterday in the port of Honolulu?

A. Yes, sir.

Q. Did you go into two shower-bath rooms, shower-bath compartments?

A. I went into one shower-bath.

Q. That is the one on the right going in, isn't it?

A. The showers are on the right of the room as we enter, yes.

Q. This shower, I mean, is on the right? [251]

Mr. WARREN.—These questions are manifestly leading.

Mr. DAVIS.—Where was the shower-bath you ex-

(Testimony of H. E. Wescott.)

amined yesterday, on the left or the right hand side of the room going in?

A. The showers were on the right of the room as we entered.

Q. Is that the shower you had examined previously? A. Yes, sir.

Q. Is that the—

Mr. WARREN.—Objected to as leading.

Mr. DAVIS.—Is there anything different about that shower now than when you examined it before?

A. Noticed the handles on the wall right back of the showers that were not there a year ago.

Q. When you first visited it before?

A. When I first visited the boat, yes.

Mr. DAVIS.—Cross-examine the witness.

Cross-examination of H. E. WESCOTT.

Mr. WARREN.—Never mind; no questions.

Mr. DAVIS.—All right. Call Mr. Hutchins.

Mr. WARREN.—Plaintiff's case is closed. The proper time is rebuttal.

Mr. DAVIS.—I ask to call Mr. Hutchins; I ask leave to recall him; I can't rebut my own case; the libellant has closed and submitted the case. Our case is closed.

The COURT.—We went down to the boat yesterday on the agreement of counsel, for the purpose of giving Mr. Wescott [252] an opportunity to identify the particular bath-room in the presence of the Court and in the presence of the proctors for the libellant and claimant. Mr. Wescott pointed out a bath-room which was identified by Mr. Hutchins as

(Testimony of H. E. Wescott.)

the bath-room which was used by him that morning, and Mr. Warren agreed that you need not put him on this morning, or anything of the kind. The bath-room has been identified. There is no question about that. The record will show that the bath-room was identified in the presence of the Court by Mr. Wescott and identified as that testified to by Mr. Hutchins as the one in which he fell.

Mr. DAVIS.—All right; then the libellant's direct case is closed.

The COURT.—We will suspend further hearing in this case until to-morrow morning at nine o'clock.

[253]

In the United States District Court, in and for the Territory of Hawaii.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," etc.,

Libellees.

Tuesday, February 20, 1917,
3:45 P. M.

Testimony of A. Ahman, for Libelee.

Direct examination of A. AHMAN, for libellee, sworn.

Mr. WARREN.—What is your name?

A. A. Ahman.

(Testimony of A. Ahman.)

Q. You are master of the steamship "Great Northern"? A. Yes, sir.

Q. And have been how long?

A. Since November; the beginning of November, 1914.

Q. Is that the date on which she first began to operate as a steamship?

A. No; she left Philadelphia on the 28th of January, 1915. **[254]**

Q. From where? A. Philadelphia.

Q. Then it was the following November you took charge of her as master?

A. No, the previous November.

Q. The previous November, I meant. A. Yes.

Q. Who brought the ship to the Pacific Coast?

A. I did.

Q. Did you personally familiarize yourself with the ship as she was in the east, where it was constructed? A. I did.

Q. Where was she constructed?

A. William Cramp & Sons shipyard.

Q. Of what place? A. Philadelphia.

Q. Philadelphia. How many years' experience have you had as a mariner?

A. Ever since I was a boy; about 45 years.

Q. And as master?

A. I have been master of the "Great Northern," as I mentioned before, and previous to that I was master of the "Santa Clara," and before that I was master of several sailing vessels.

Q. How many years have you had in experience,

(Testimony of A. Ahman.)

in operating passenger ships? A. Since 1886.

Q. How general has been your experience in sailing the seas, where have you been?

A. Practically all over the world.

Q. And where—

A. Oh, largely on the Pacific China trade, and Japan, Panama, [255] and Central America.

Q. What was the "Santa Clara,"—where did she run? A. San Francisco, on the coast.

Q. Coastwise? A. Yes.

The COURT.—Mr. Davis, I suppose you will admit the qualifications of Captain Ahman as a mariner?

Mr. DAVIS.—Certainly, your Honor.

Mr. WARREN.—In what passenger steamers have you served in any capacity?

A. On the "China," "City of Pekin," "City of Sydney," "Panama," and a number of others, not very many but a few besides the "Great Northern."

Q. Have you been first officer on any other passenger vessels than you have just mentioned?

A. No.

Q. Second officer? A. Yes.

Q. What vessels?

A. Second officer on the "City of Panama" and the "Asia."

Q. What opportunities have you had on vessels to observe the manner in which such vessels are outfitted and equipped for passenger service and particularly as to the facilities afforded first-class passengers for bathing?

(Testimony of A. Ahman.)

Mr. DAVIS.—That is objected to; that has nothing to do with the case about this particular bath; your Honor will rule it out as incompetent, irrelevant and imaterial. Your Honor has already ruled that out.

The COURT.—I don't think that exact question has ever been ruled out. He asked what experience he has had. I will overrule the objection. **[256]**

Mr. DAVIS.—What was done on other vessels is no guide here.

The COURT.—No; I am not permitting him to testify as to that, but he is qualified to give what knowledge or experience he has had of the equipment for bathing on other vessels for passengers, and for taking baths.

A. Well, I have been in no ships that have been equipped like the "Great Northern" is with bath-rooms and showers separate. Wherever there has been a bath-room—

Mr. WARREN.—Just a moment. My question was what opportunity have you had to study or observe the bathing facilities on passenger steamers generally.

Mr. DAVIS.—The captain told you by comparison; he said on other ships it is different.

The COURT.—He went further than the question then.

Mr. WARREN.—First state what opportunity you have had to study and observe these things.

A. As a rule, I observe these things in all the ships I have ever been.

(Testimony of A. Ahman.)

The COURT.—That answers the question.

A. And I find in no place the facilities such as we have on the "Great Northern."

Mr. WARREN.—Have you observed on these various vessels just what the equipment is for bathing facilities on passenger vessels as a rule?

A. Yes.

Q. You are personally familiar with the general equipment of passenger vessels? A. I am.

Q. Now, generally speaking, what has been your observation as **[257]** to what kind of equipment is ordinarily found on passenger steamers so far as means of showers are concerned?

Mr. DAVIS.—How can that affect this case? The whole question in this case is, was that place dangerous?

The COURT.—Objection overruled.

A. What was the question?

(Last question read.)

A. Well, all the ships in general what I have seen there has just been a shower on top of the bath-tub.

Mr. WARREN.—Over the bath-tub?

A. Over the bath-tub or over the trough.

Q. What kind of a bath-tub?

A. One of these round porcelain baths.

Q. Did you have any personal connection or acquaintance with the "Great Northern" during construction?

A. Partly, yes; they was finishing up things.

Q. Did they extend to observation and knowledge of the construction of her shower-baths?

(Testimony of A. Ahman.)

A. Partly, yes.

Q. Let me ask you, do you know what is the reputation of William Cramp & Sons as shipbuilders?

Mr. DAVIS.—I object to the question, if your Honor please, as incompetent, irrelevant and immaterial, not tending to prove or disprove any of the issues in this case.

The COURT.—I will sustain the objection.

Mr. WARREN.—In the question of whether or not a vessel is constructed scientifically and up to date and modern, isn't it proper to show the reputation of the builders.

The COURT.—That is not the question, whether the "Great [258] Northern" is that kind of a ship or not. The question is whether or not that bathroom was unsafe by reason of the lack of any equipment for safety.

Mr. WARREN.—It is alleged here that the equipment is out of date and not modern. One of the issues in this case is whether or not this is modern equipment.

The COURT.—I don't see that the reputation of the shipbuilders has anything to do with it.

Mr. WARREN.—We note an exception, your Honor.

The COURT.—Exception allowed and noted.

Mr. WARREN.—Who are William Cramp and Sons?

A. Shipbuilders.

Mr. DAVIS.—It is incompetent, irrelevant and immaterial who they are.

(Testimony of A. Ahman.)

A. Shipbuilders.

The COURT.—He has answered. I overrule the objection. Let it go in, Mr. Davis.

Mr. WARREN.—On any of the steamships you have named, were any of them equipped with shower-baths?

A. No.

Q. Of the kind of the "Great Northern"?

A. No.

Q. Do you know of any vessel other than the "Great Northern" which is similarly equipped with shower-baths? A. I do not.

Q. Do you know the "Northern Pacific"?

A. Oh, except the "Northern Pacific."

Q. How is that vessel equipped?

A. Exactly as the "Great Northern," both sister ships. **[259]**

Q. Do you know the shower-room on C deck of the "Great Northern" where Mr. Hutchins had an accident? A. I do; yes.

Q. Would you recognize a photograph of that room? A. Yes, sir.

Q. While waiting for the photographs, please briefly describe the shower-room; show us how it is made, constructed and equipped.

A. It is on the port side, the right-hand side; the right-hand side is a marble slab about thirty inches wide, and on the left-hand side is also a marble slab of similar size against the wall of the heating-room. Across on top of the entrance is a bar for assisting in going into the shower-room, and also a curtain

(Testimony of A. Ahman.)

rod; it answers two purposes. In the bottom of the shower is a porcelain basin slightly lowered towards the center, sloping probably a half to an inch from the main level, from the edges, and on the entrance is a sort of wash board like, you might call it, or a coaming, that is rounded up to three inches on the outside and about equally on the inside with a rounded top, and directly on the wall is a grab-handle or grab-iron, you might call it—

Q. What wall?

A. The front wall in the shower.

The COURT.—You mean the wall that would be right in front of a man standing or entering the shower-room?

A. Yes, entering in.

Q. On the back wall of the shower or in front of a man standing in the opening? **[260]**

A. Yes.

Mr. WARREN.—I would ask you to what time does this description relate? You are describing the bath-room as of what time?

A. At the time Mr. Hutchins fell down.

Q. At that time,—I would ask you have you described all of the facilities that are there for purposes of safety to a person using the bath?

A. Yes, sir; except there is a door to the heating-room with a good-sized door-knob on it which can also assist a person coming in there if he don't want to reach up with his right hand and get hold of the bar or grab-iron.

Q. I now call your attention to three photographs

(Testimony of A. Ahman.)

marked Claimant's Exhibits 1, 2 and 3, attached to the deposition of Walter A. Scott, and ask you to look at them.

A. Yes, these are photographs of the shower-bath.

Q. What is that?

A. Photographs of the shower-bath on the "Great Northern," I presume.

Q. Will you point out on any one of these photographs the grab-handle you have referred to as being on the back wall? A. That is the one here.

Q. Are you positive that that grab-handle was on that back wall at the time of Mr. Hutchins' accident?

Mr. DAVIS.—I object to that question, your Honor, as leading and highly improper; he can ask the captain when he last saw it.

The COURT.—It is leading, and I will sustain the objection **[261]** on that account.

Mr. WARREN.—How do you fix in your mind the fact that you have stated that this handle was there?

Mr. DAVIS.—He never stated that yet.

The COURT.—Yes, he did; he stated, that is, described, the condition of it as it was at the time Mr. Hutchins was injured by his fall. Now, Mr. Warren, ask him how he fixes it in his mind as to—

A. I had one of the little tables on the veranda pulled loose from the deck, and I had it on a requisition to have it properly fixed in San Francisco that voyage, which was the beginning of January, and I

(Testimony of A. Ahman.)

happened to come up on deck at that time and Simon, he was doing the work, refastening it, and I told him also to put a brass bar or an angle-fire bar around the table for a person coming out of the smoking-room to get hold of, and he said no, to make it of wood so that anybody can get hold of it, and at the same time it acts for a tray so that glasses and things won't fall off.

Mr. WARREN.—One of these tables—

A. And I was going forward, I had some business with the purser and going up to my room at the same time. After getting through with the purser we passed the bath-room or the shower-bath and Simon went in there,—he wanted to go in there, and I said what for, and he said he had a man working to put up the grab-irons, and I went in there and saw a man in there working on it putting them up.

The COURT.—So that the substance of your answer as to how you know is, you saw a man in there putting them up? **[262]** A. Yes, sir.

Q. When?

A. The trip on New Year's, when we left, the first trip after New Year's.

Mr. WARREN.—About what date in January?

A. I don't remember exactly when that was, but I know it was the Christmas trip when we pulled this table down and we had the table fastened on that trip and also put the grab-irons in at the same time, because Mr. Simons called my attention to it at the time I went by, as he wanted to go in the shower-room.

(Testimony of A. Ahman.)

The COURT.—The Christmas trip of 1916?

A. Yes, sir.

Mr. WARREN.—Was that before or after Mr. Hutchins—

A. The Christmas trip of 1915.

Q. Was that before or after the trip on which Mr. Hutchins was a passenger?

A. No, I think it must have been two trips before he was a passenger, one or two.

Q. But it was before?

A. It was before, sir. I did not make the requisition for this, mind you. I had my attention called to it that he had a man working in there and he went himself to see if it was done.

The COURT.—They were not in there originally, to start with?

A. No, not originally.

Q. These grab-irons were not on her to start, when the ship first came out from Philadelphia to San Francisco?

A. No, they were put on in San Francisco. **[263]**

Mr. WARREN.—I call your attention to some pipes on the left wall of this shower compartment as shown in these photographs. State what they are.

A. They are heating-pipes, one steam and one cold water.

Q. Which is the cold water?

A. It is one of these two, I don't know, but it connects here in the bottom and comes up to the shower straightaway on deck.

Q. I will call your particular attention to a handle

(Testimony of A. Ahman.)

in these photographs appearing as a lever at the bottom of these pipes. Is that there now?

A. No,—let me see now; I guess it is, but there is two valves. We changed the valves, one on the water and one on the steam.

Q. When was that change made?

A. Not very long ago; the other one was worn out.

Q. Since Mr. Hutchins' trip or before?

A. No, that is lately; that is on account of them being worn out, they were leaking.

Q. But at the time of the trip of Mr. Hutchins on the boat, is this a correct representation?

A. Yes, sir, exactly.

Q. Is there anything about that photograph, or either of these three photographs which shows anything of that shower compartment or its equipment whatever in any way, in any way different from the time Mr. Hutchins was a passenger on that boat?

A. No, no.

Q. Your answer is what? You cannot shake your head. You **[264]** must answer verbally.

A. I said no.

Q. In your observation of shower-bath facilities, have you studied them with a view of determining the features of safety in their use? A. Yes.

Q. To what extent have you looked into that?

A. I don't see any way it can be improved on.

Q. No, I am asking whether or not in your experience you have, in seeing other, other equipment and bathing facilities on ships, paid attention to safety factors.

(Testimony of A. Ahman.)

A. The fact as I have stated before, I haven't been in no ships or seen no ships that have the same facilities for bathing that we have on the "Great Northern," and that is absolutely the best I have ever seen.

Q. But have you given attention to the point of safety of shower-baths, generally speaking?

A. Well, I can't see anything wrong with them; everything is there that they can get hold of to go into.

Q. Have you in your experience observed any facility or equipment in connection with the shower, by which I mean the water descending from above for the use of the passenger, which could be incorporated in this compartment and improve it in any way from the standpoint of safety?

A. Well, I don't know unless they put two assistants in there to hold somebody up.

Q. Put what?

A. Put two assistants in there to hold people up from falling down. **[265]**

Q. A couple of assistants?

A. Yes, a couple of nurses; I don't know of anything else.

Q. What about the lighting facilities in this room, Captain, where the compartment is?

A. There is one light right in the center of the deck.

Q. What can you say of the opportunity of any person going into the bath to observe the equipment and facilities in the bath?

(Testimony of A. Ahman.)

A. This light will show all over in the bath-rooms, and the showers.

Q. Have you an idea, Captain, can you tell us approximately the number of passengers that have been carried on the "Great Northern" since you have been master of her?

A. I don't remember exactly how many now. I could have if I thought of it. I had a record of it, but up until last May I carried forty-six thousand.

Q. Up to last May?

A. Up to last May, yes, sir.

Q. And could you give us your best judgment of how many since—I withdraw that. Have you also any personal knowledge of the carrying capacity of the steamship "Northern Pacific"?

A. Just about equal, we run close together, just about equal, although I think the "Great Northern" may be a thousand or two ahead of her.

Q. Prior to this accident of Mr. Hutchins, have you heard of any complaint made about any shower on either of these vessels?

Mr. DAVIS.—That is incompetent, irrelevant and immaterial, not tending to prove or disprove any of the issues in this **[266]** case.

The COURT.—I think it is material, objection overruled.

Mr. DAVIS.—To which ruling I respectfully except and assign the same as error.

The COURT.—Exception noted and allowed.

A. No.

Mr. WARREN.—How many showers of this par-

(Testimony of A. Ahman.)

ticular construction are there on the "Great Northern"?

Mr. DAVIS.—That is objected to as incompetent, irrelevant and immaterial. We are concerned with one only, and *this taking* up time.

The COURT.—The case will get through quicker by letting it all in. Answer the question.

A. Two on C deck, four on B deck, and there is quite a number of them on A deck, the bachelors' quarters, I don't know how many.

Mr. WARREN.—Well, about how many?

A. Well, I guess about six on each side. I wouldn't say for sure.

Q. Do you know how frequently these showers are used by the passengers?

A. They are used all the time.

Mr. DAVIS.—Incompetent, irrelevant and immaterial, your Honor.

The COURT.—Overrule the objection.

Mr. WARREN.—You say they are used all the time? A. All the time.

Mr. DAVIS.—I respectfully except to your Honor's ruling.

The COURT.—Exception allowed. [267]

Mr. WARREN.—Are there any other precautions which from your observation in connection with shower facilities that could be used in your judgment to make this shower more safe than it is?

A. No.

Mr. DAVIS.—I object on the grounds that that has been asked and answered three times.

(Testimony of A. Ahman.)

The COURT.—Objection sustained. It has been asked and answered two or three times, Mr. Warren.

Mr. WARREN.—On this steamer "Great Northern," what facilities are there for bathing, other than these shower compartments?

Mr. DAVIS.—Objected to as incompetent, irrelevant and immaterial, I don't care.

Mr. WARREN.—I think it is quite relevant to show your Honor that a passenger wishing to take a bath, and we presume most passengers do, are not obliged to use this but may use facilities of a different kind, if they choose.

The COURT.—And if he wants a shower-bath he is entitled to use one that is perfectly safe. Objection sustained.

Mr. WARREN.—If a passenger desires to take a bath on board *board* that vessel, are there facilities for taking one other than the shower-room?

Mr. DAVIS.—Objected to on the same grounds.

The COURT.—Objection sustained.

Mr. WARREN.—Any regulations on board the vessel requiring passengers to take a bath?

Mr. DAVIS.—Incompetent, irrelevant and immaterial.

The COURT.—Sustain the objection. [268]

Mr. WARREN.—Do you know Doctor Macadory?

A. I do.

Q. When was he first engaged as a physician or doctor for the ship, do you remember?

A. When we started to run to Honolulu. He was

(Testimony of A. Ahman.)

engaged about the beginning, November 27, 1915, no, that would be 14, no, 15, 1915.

Q. At the time he was engaged did you yourself make any inquiry as to his qualifications?

A. I did, sir; I asked him where he had been.

Q. State to the Court what inquiries you made into the matter of competency and qualifications.

A. Well, I asked him if he had any experience at sea, and he told me yes, he had been in the Pacific Mail, and he also told me he had been in the United States army.

Q. United States army? A. Yes.

Q. Yes?

A. In there some place, I don't know.

Q. That is as to where he had served? A. Yes.

Q. Did you look into the matter of what certificates he held, if any?

A. No, I didn't because he was hired by the marine superintendent, Mr. Wiley, at the time, and I only asked him where he had been before he come aboard the ship, and he told me he had been in the Pacific Mail and also in the United States army as doctor.

Q. At that time had any fact or circumstance whatever come to your knowledge to raise the question of competency or [269] incompetency?

Mr. DAVIS.—Objected to, if your Honor please.

A. No.

The COURT.—Overrule the objection.

Mr. DAVIS.—To which ruling I respectfully except on the grounds that it is not proper, is leading, and is asking for something that—

(Testimony of A. Ahman.)

The COURT.—Your exception is allowed. Proceed.

Mr. WARREN.—What was your belief at the time as to his competency?

Mr. DAVIS.—I object to that, his belief is not evidence, absolutely not.

The COURT.—I understand that, Mr. Davis, but at the same time it is a legitimate question also. Overrule the objection.

Mr. DAVIS.—To which ruling we respectfully except.

The COURT.—Exception allowed.

Mr. DAVIS.—And on the ground that it is incompetent, irrelevant and immaterial, and calling for the conclusion of the witness, and that his belief as to the competency of the physician or his disbelief cannot affect this question. The question is, did he hire a competent physician, not his belief.

The COURT.—Answer the question.

A. I know that Mr. Wiley, he wouldn't—

Mr. DAVIS.—Never mind Mr. Wiley, I object if your Honor please.

The COURT.—Captain, you can say as to your belief, but not what Captain Wiley thought, and you will just answer the [270] question as to what your belief is about it.

A. My belief is that he was a doctor.

Mr. WARREN.—How long did he serve with you?

A. He served with us last winter while we were running to Honolulu, from November, 1915, to April, 1916, when the ship was withdrawn from the service

(Testimony of A. Ahman.)

to go to the coastwise trade.

Q. During his service with you, have you knowledge of any complaints that have ever been made regarding his competency? A. No.

Q. By the passengers? A. No.

Mr. WARREN.—Cross-examine.

Cross-examination of A. AHMAN.

Mr. DAVIS.—This conversation inquiring into his competency, this conversation was with Doctor Macadory himself? A. Yes.

Q. You never asked any other doctor about him?

A. I did not.

Q. Did he tell you what college he come from?

A. No.

Q. Did you write to any of the colleges or hospitals where he had been or where he had served?

A. No.

Q. That's all I want to know. A. No. [271]

Q. When were these photographs, Mr. Warren, exhibited to you, when were they taken?

A. In San Francisco.

Q. Seen any date on them, the date they were taken? A. I didn't notice any date.

Q. Do you know when they were taken?

A. I couldn't say positively, but I have an idea when they were taken.

Q. Well, I want to know positively.

A. I don't know positively.

Q. You don't. Now, then, was you in that shower, that particular shower-bath that has been pointed out to you on C deck on the morning of the

(Testimony of A. Ahman.)

18th of February, 1916? A. I was not there, no.

Q. Was you there the night before? A. No.

Q. Was you there two days before? A. No.

Q. When was you there, the last time, Captain Ahman? A. I was there to-day.

Q. No, I mean on that particular trip.

A. I don't know that I was there at all on that particular trip.

Q. You don't know whether you was there on that particular trip or not? A. No.

Q. Did you see Mr. Hutchins after the accident happened to him on the 18th of February?

A. I did.

Q. Where was he, Captain?

A. He was sitting alongside of me in the lounge-room acting [272] as judge on a mock marriage trial.

Q. What time?

A. It was about eight o'clock in the evening.

Q. You didn't have any conversation about his injuries? A. No.

Q. You never had any conversation with him?

A. No.

Q. Never asked him how he was?

A. I don't know at that time that I recollect.

Q. The doctor hadn't reported this accident of Mr. Hutchins to you, had he?

A. I feel satisfied he had not at that time.

Q. No?

A. No, because that report come in the next morning.

(Testimony of A. Ahman.)

Q. But up to that time he hadn't? A. No.

Q. What did he report, did he report it as a bruise?

A. I couldn't say, I couldn't remember now. He reported that the man fell and hurt his shoulder slightly.

Q. Was it a written report? A. No.

Q. Just a verbal report? A. A verbal report.

Q. The report as you remember it now was that the man had injured his shoulder slightly?

A. Yes.

Q. Then it passed out of your recollection, you had a lot of passengers there?

A. I don't recollect anything more about it.

Q. You never went to see the man yourself, or the doctor, any of your officers go to see him?

A. The doctor attended to that. [273]

Q. But you didn't yourself? A. No.

Q. Now, then, the condition of the surface of that particular bath, that is, the bottom of it where a man puts his foot, in plain English you don't know the condition of that on the morning of the 18th of February when Mr. Hutchins entered it, from personal examination, do you?

A. I am positive I know the bath-rooms are clean.

Q. I didn't ask you that, Captain, I asked you the condition of that, you don't know from your own examination, personal examination of it?

A. No, I didn't examine it; no.

Q. And as to whether it was slippery or not you don't know? A. I don't know; no.

(Testimony of A. Ahman.)

Q. That's fair.

A. The bath-rooms, they are as they always are.

Q. Now, these pipes that run up and down the wall, one is the hot-water pipe?

A. Yes, one is hot.

Q. If anybody took hold of it it would blister his hand, wouldn't it?

A. There is a handle there.

Q. I am saying the pipe itself, if you took hold of that pipe of hot water, that hot-water pipe, it would blister your hand, wouldn't it?

A. I don't think it is hot enough for that.

Q. What? A. I never tried it.

Q. Steam is pretty hot, isn't it?

A. I wouldn't try it.

Q. Eh? A. I wouldn't try it.

Q. Did you notice,—did you ever see Mr. Hutchins on deck [274] with his arm in this position?

A. No, I did not.

Q. Never did? A. No.

Q. Anybody ever report it to you that he did walk in that manner? A. No.

Q. I suppose you had some conversation with Mr. Warren,—oh, by the way, I will withdraw that, Captain Ahmen. I was going to ask you, Captain, are you aware that on the steamers of the Atlantic running between New York and Liverpool before the outbreak of this war, and running between New York and any place, and running between New York and Berlin, that they all have shower-baths on them, these first-class passenger ocean steamers?

(Testimony of A. Ahman.)

A. Yes, the "Great Northern" was built very much on the same plans as the "Lusitania" and the "Mauritania."

Q. And what you mean by no other ship you mean plying on the Pacific, except the "Northern Pacific"?

A. No.

Q. But on the Atlantic they all have shower-baths, these first-class steamers, like the "White Star" and the "Cunard" and the other big lines?

A. Yes, they are all fitted about the same in that line.

Q. Now, Captain, there is quite a drop, ain't there, what I mean is, I suppose it is necessary, but there is quite a drop from the outer rim of that bowl, we will call it, to the center where the water goes down, isn't there?

A. Yes, sir, there is a little drop there.

Q. Yes, and it's made of porcelain, eh? [275]

A. Made of porcelain; yes.

Q. And porcelain is more slippery than zinc?

A. No, I don't think so.

Q. Eh? A. No.

Q. It is not? A. No, it is not.

Q. Rough zinc?

A. Well, you can take rough porcelain, too.

Q. Yes, but I mean this is simply porcelain polished, isn't it?

A. No, it's not positively smooth porcelain.

Q. Highly polished, isn't it? A. No.

Q. Glazed? A. No.

Q. Will you swear it is not glazed?

(Testimony of A. Ahman.)

A. It is not what is called glazed porcelain. I call it frosted porcelain.

Q. You call it frosted porcelain?

A. Yes, I call it frosted porcelain.

Q. Exactly, but we saw it yesterday, too; the Judge was down there. Rather slippery, isn't it?

A. I wouldn't say it is any slipperier than zinc.

Q. But it is, ain't it, isn't it slippery?

A. I wouldn't say it is; no.

Q. It isn't the same as standing on this wood, is it, more slippery than standing on this wood, is it?

A. If the wood was wet it would probably be more slippery.

Q. Not the same as if I stand on this wood?

A. If it is dry.

Q. Swear to that?

A. I honestly believe it is not any worse.

Q. Now, Captain, it isn't like this linoleum, more slippery? [276]

A. In the condition it is now; yes.

Q. And you undertake to swear, Captain, that that porcelain bowl there is not more slippery than the zinc edge of this mat?

A. I would be willing to do it.

Q. Have you examined this?

A. I can see it from here.

Q. But you have not examined it?

A. Oh, I can see your feet going on it.

Q. Yes, I went on that porcelain bowl, too. When Mr. Hutchins said that porcelain bowl when he stepped on it was like stepping on ice he is mistaken?

(Testimony of A. Ahman.)

A. Well, there is two ways of looking at that.

Q. Well, do you think he is mistaken?

A. Yes, he is.

Q. He is mistaken?

A. Yes. If he had looked where he was going he wouldn't have slipped.

Q. I didn't ask you that. You think he is mistaken? A. Yes.

Q. When he made that statement? A. Yes.

Q. That's what I asked you, and now, Captain, you got a hospital room on board that vessel properly equipped with everything?

A. As far as I know; yes.

Mr. WARREN.—Not brought out; I object unless you make him your own witness.

Mr. DAVIS.—For that purpose I will.

Q. You got a hospital room there? [277]

A. Yes, we have one or two rooms set aside.

Q. Certainly you would on a vessel like that, and that is equipped with bandages and instruments, some surgical instruments? A. Yes, sir.

Q. And medicines?

A. Yes, medicines of different kinds.

Q. Medicines of different kinds, and all kinds of bandages?

A. Oh, lots of them, yes, and cotton batten and such as that for burns.

Q. Bandages sufficient to wind around a man's body and to wind up around a broken arm?

A. Yes.

Q. So as to keep it from moving?

(Testimony of A. Ahman.)

A. Yes, sir, we have.

Q. You have all of that? A. Yes.

Q. Who took these photographs?

A. I couldn't say who took these photographs.

Q. They were taken in San Francisco?

A. Taken in San Francisco; yes.

Q. And just when you don't know?

A. No, I wouldn't say positively.

Q. I guess that's all, Captain, I have to ask of you. You didn't see Mr. Hutchins when he went ashore? A. No.

Q. Either at Hilo or Honolulu?

A. I only saw him a couple of days.

Q. Either at Hilo or Honolulu you didn't see him?

A. I saw him at Honolulu after we got there.

Q. No, before he got there. A. No. [278]

Q. You never inquired or called personally how he was on the vessel or any time? A. No.

Mr. DAVIS.—That's all.

A. I only saw him once at the trial he was supposed to act at the night after. He was supposed to hurt himself in the morning—

Mr. DAVIS.—I am not asking you for voluntary testimony.

A. All right.

Mr. WARREN.—I think it is responsive, your Honor; let him finish it.

The COURT.—That is all right. Continue this case until to-morrow morning at nine o'clock. [279]

In the United States District Court, in and for the Territory of Hawaii.

AD. 147.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," etc.,

Libellees.

Honolulu, H. T., Wednesday, February 20, 1917.
10:00 A. M.

Mr. WARREN.—If your Honor please, I would like at this time to refer to the amendment which was filed to the libel on the morning of the 16th instant alleging incompetency of the physician on board the "Great Northern," and knowledge of incompetency of the physician by the owners, and give notice at this time that I would like to move for a deposition on that issue, a formal motion for the issuance of the commission to take the deposition is being prepared now by my partner, Judge Whitney, and will be here to-day. I am willing to make the motion orally this morning and ask your Honor to hear it that way, and to state that immediately on that day upon arrival I sent a cable [280] message to the company at Portland, Oregon, inquiring the names of such persons as I would have to take the evidence of upon that issue, and on the 17th late I received their reply to await the arrival of the

"Great Northern" and consult the captain, purser and engineer, which I did, and your Honor knows that I have been very busily engaged. I have ascertained from them the extent to which they can testify. I am not satisfied with the extent of it and wish formally to move to take the deposition of Mr. C. W. Wiley, the marine superintendent of the Great Northern Pacific Steamship Company at Portland, Oregon, as being the man who engaged Doctor Macadory and looked into the matter of his qualifications and competency.

Mr. DAVIS.—Now, your Honor, I oppose the issue of any such a deposition as all of the issues are well defined here. The libellant's case is all in now, and after it is all in he wants depositions taken. The evidence so far is that this physician done nothing, the man's arm was broken and he did nothing. It is not a question of negligence or malpractice but he did nothing but give the man two pellets, and that's all he did. There is no way in the world to show that he treated this man for a broken arm, and the question can only arise where he started to treat him and treated him unskillfully, but Doctor Macadory never did anything, never treated him at all in any way, there is no way to meet the issue, the testimony shows he never even made an attempt to set this arm or bandage it or immobilize it or nothing, he did nothing. He gave the man two pellets with a broken arm and it was so allowed [281] to remain. I don't care how competent he may have been at one time. There is evidence of incompetency that cannot be overcome except to show that he made an at-

tempt to treat this man scientifically and with reasonable care and skill. The superintendent at Portland was not on the voyage and knew nothing of the injury to the passenger, knew nothing of his treatment or anything of the kind. It doesn't make any difference, he was in their employ and it was their duty, and can they show his competency by showing at one time that he was competent and when he did nothing on the vessel? If Macadory had treated this man and made a mistake on him, all right, but he did nothing but give him two pellets, and they have got to meet that testimony.

Mr. WARREN.—Very well; I desire to be sworn on this point.

The COURT.—It is unnecessary to be sworn on that. When this case was filed counsel desired to file an amendment, and if this case had gone to trial without any amendment being made, and you had desired to prove a thing on that issue I would have permitted it and I would have allowed the other side to meet it. I can't cut parties off from getting their proof. I think I should allow it, I will allow an opportunity to take this testimony. I will allow three weeks from next Saturday for the return of the depositions.

Mr. WARREN.—And your Honor will make any modification of that if circumstances necessitate?

The COURT.—If circumstances necessitate; yes.

Mr. DAVIS.—And I object to any modification of it. [282]

Testimony of Joseph Gould, for Libelee.

Direct Examination of JOSEPH GOULD, for libellee, sworn.

Mr. WARREN.—Your name please?

A. Joseph Gould.

Q. Mr. Gould, you are a steward on the "Great Northern"? A. Yes, sir.

Q. And were on the trip when Mr. C. J. Hutchins was a passenger from San Francisco to Hilo in February last? A. I was.

Q. Are you acquainted with the shower-bath compartments on C deck of that vessel? A. I am.

Q. Would you be able to identify photographs of those shower compartments? A. Yes, sir.

Q. I will draw your attention to three photographs marked Claimant's Exhibits 1, 2 and 3, in connection with the deposition of Mr. Scott, and ask you to look at those. Do these photographs serve to identify to you any particular thing with which you are acquainted?

A. Yes, they are photographs of the showers on C deck.

Q. Will you look at this photograph carefully and state whether or not you can see whether they are correct representations of the shower-room on C deck as it was on the trip when Mr. Hutchins was a passenger?

A. They are the same. This is the port-side shower.

Q. That is the port-side shower. I will call your particular attention to what appears to be a handle

(Testimony of Joseph Gould.)

or grab-iron [283] on the back wall of this room in each of these pictures, and ask you to state whether or not you know whether or not that picture of it correctly represents—the picture in that record represents the compartment as it was on that trip.

Mr. DAVIS.—I object, your Honor; there is no evidence of it, and it is leading.

The COURT.—Objection overruled.

Mr. DAVIS.—To which ruling I respectfully except.

The COURT.—Exception allowed.

A. It is a correct representation of the room at that time.

Mr. WARREN.—How with respect to the handles there appearing?

A. I don't understand the question.

Q. Do you know of your own knowledge whether that handle was in the shower-room or was not in the shower-room on the trip that Mr. Hutchins was on? A. It was in there.

Q. Did you see it yourself? A. Yes, sir.

Q. How do you know, what circumstances fix that in your mind as to it having been there on that trip?

A. I would have to go into that at length in *bring* up the circumstances of my knowledge of that being in there.

Q. Yes?

A. I am just getting over a cold; my voice is not strong. Probably if I stand up you will hear me better.

Q. It is not necessary to stand up.

(Testimony of Joseph Gould.)

A. In working around my place, it has always been the custom in getting ready—

Mr. DAVIS.—I object to the customs. [284]

Mr. WARREN.—State the circumstances that cause you to know, the circumstances that were impressed on your mind and cause you to know that this hand-hold was there at that time, without stating the customs.

A. I visited the deck below, C deck, where this room is located to see if my mate was ready for sea, that's the reason I speak of the custom, ready for sea at a certain time before sailing, and my handles were delayed in being put on. They finished mine last. I was ready for sea and Simons came in there when I was all cleaned up and ready for sailing the day before inspection.

Q. Your handles were on the day before sailing, if I understand?

A. He came in the day before sailing when I was all ready for sea and took—he drilled the holes for the handles, for fitting the handles on up on my deck.

Q. That is which deck?

A. B deck, that's where I worked at that time, and I went down to C deck to see if my mate was ready for sea and his were all finished up and mine were not put on until the following day, that was sailing day, the 25th. On the day before, the 24th, we were all supposed to be ready for inspection or ready for sea, that's why I spoke of custom.

The COURT.—All right, sit down.

Mr. WARREN.—Cross-examine.

(Testimony of Joseph Gould.)

Cross-examination of JOSEPH GOULD. [285]

Mr. DAVIS.—Was you in that shower-bath room on the morning of the 18th of February, 1916?

A. On the morning of the 18th of February?

Q. Yes. A. No.

Q. Was you in on the morning of the 19th of February, 1916? A. No.

Q. On the 20th? A. No.

Q. On the 21st? A. No.

Q. Therefore you didn't see that handle there on the 18th of February, 1916? A. No.

Q. No, and do you know when that photograph was taken?

A. No,—I believe it was when the season run was finished, the run from the mainland to the Hawaiian Islands and return, that was before she laid up and went to dry dock.

Q. I want to know when the photographs were taken, you can fix the time.

A. I can't state positively.

Q. Well, as near as you can, what month of the year, what year was it in, were they taken in 1910?

A. Taken in 1916.

Q. Well, what month?

A. I forget now; it was either April or May.

Q. Either April or May of 1916?

A. Of 1916, somewhere around there.

Q. That's two months after this voyage that you speak of?

A. It was when the run was finished, I believe.

Q. Yes, it was after that trip; they were taken at

(Testimony of Joseph Gould.)

San Francisco. [286] A. Yes.

Q. And after that trip was finished?

A. When the season run was over.

Q. When that trip was over? A. Yes.

Q. The trip that was spoken of? A. Yes.

Q. Were you present when the photographs were taken? A No.

Q. You don't know who took them?

A. No, but I do remember being asked to unlock the doors—

Q. I am not asking you that; never mind volunteering any evidence here; just answer the questions, please. A. Very well.

Q. When I want to know anything I'll ask you. How long have you been in the employ of the "Great Northern," approximately?

A. About July, 1916.

Q. You are on the ship's articles?

A. I signed on that trip, on this run.

Q. At what wages?

A. Previous to—to about six months ago $30.00; now $35.00 per month at the present time.

Q. At the present time $35.00? A. Yes.

Q. Did you have any conversation with Mr. Morris about this particular shower-bath and these handles at any time, and if so, when?

A. With Mr. Morris?

Q. Yes.

A. I don't know that I ever had any direct conversation about them, just in looking around. I don't know as we had any [287] relative conver-

(Testimony of Joseph Gould.)

sation that would apply to this case,—

Q. Did you have any conversation?

A. I don't quite—

The COURT.—Don't interrupt the witness in giving his answer, read the answer.

(Last answer read.)

Mr. DAVIS.—I will put the question again; now he either had or hadn't.

Q. Did you have any conversation with Mr. Morris, the chief engineer, about this particular shower-bath on C deck? A. No.

Q. Did you have any conversation with any other official of the vessel about it, or connected with the steamship company? A. Yes.

Q. When?

A. After the steamer came off of this run.

Q. Who was that person you had the conversation with, Metzler? A. Mr. Relf, the claim agent.

Q. Oh, the claim agent, you had a conversation with him about it? A. Yes, sir.

Q. Can you fix the date of that conversation?

A. No, I cannot.

Q. Then you told him all you knew about it?

A. No, he asked me—

Q. I didn't ask you what he asked you.

The COURT.—He said no, and that settles it.

A. No. [288]

Mr. DAVIS.—That was after the accident to Mr. Hutchins, this was after February 18, 1916, wasn't it? A. Yes.

Q. Yes, and that took place at Portland, Oregon,

(Testimony of Joseph Gould.)

this conversation? A. No.

Q. Where? A. At sea.

Q. Was he on the "Great Northern"? A. Yes.

Q. Well, give us—can you fix the date?

A. It was in May some time.

Q. 1916? A. Yes.

Q. Who is this man you were talking about, this other man about being ready for sea, you were talking about a man you went to see, if your mate was ready for sea, who is he?

A. A bath-room steward named Burns.

Q. Is he here? A. No.

Q. Where is he, do you know, this bath steward named Burns?

A. Working at San Francisco at present.

Q. You wasn't in charge of C deck, was you?

A. No.

Q. Who was? A. Burns.

Q. I thought so. What shower-baths were you in charge of on another deck?

A. B deck, directly above.

Q. Eh? A. On B deck, directly above.

Q. Yes, you got charge of the showers on B deck?

A. Yes.

Mr. DAVIS.—That is all. [289]

Testimony of John B. Morris, for Libelee (Recalled).

Direct Examination of JOHN B. MORRIS (Continued)—Recalled.

Mr. WARREN.—Calling your attention again,

(Testimony of John B. Morris.)

Mr. Morris, to the three photographs, Claimant's Exhibits 1, 2 and 3, on Mr. Scott's deposition, I call your particular attention to a rod over the opening in front carrying a curtain on exhibits 2 and 3, and ask you to state the size of that rod and how it is secured.

A. The rod is intended to hold the curtains so when a person goes in the shower they can close them in the shower-bath by drawing the curtains. When they put these rods in they had to take into consideration that the rod must be strong enough to sustain the weight of a person who might grab the curtains and tear it down.

Mr. DAVIS.—What they take into consideration is not evidence. I move it be stricken; it is a conclusion of the witness entirely.

Mr. WARREN.—I submit the witness is qualified as an expert to state the purpose of these things.

The COURT.—The point is what size?

Mr. WARREN.—Yes.

A. The rod is about, I should judge, one and a half inches.

Q. How secured?

A. It is secured by bolting on to the marble slab at the other side.

Q. Do you know what weight it will sustain?

A. It will sustain the weight of a man of my own size, over two hundred pounds, easily. [290]

Q. What are the purposes or offices of that rod in all?

(Testimony of John B. Morris.)

A. To hold the curtains surrounding the shower-bath.

Q. And anything else?

A. No; that's the only purpose it is used for.

Q. You have spoken of it being made strong enough to hold the weight of a person if they should grab it. A. Yes, sir.

Q. Has your experience in the construction of bath-rooms qualified you to know whether or not that demand would be made upon such a rod?

A. Yes, sir; it might be made on it at any time; say when the ship is rolling and one would have a fancy to grab anything that is there to reach to hold themselves.

Q. Has there been any change in the shower compartment since the photograph was taken?

A. Yes, sir.

Q. What change?

A. The mixing valve has been changed.

Q. Will you please indicate to the Court what, if anything, has been eliminated from this compartment? A. The lever has been eliminated.

Q. At the bottom of these two pipes?

A. Yes, sir; the lever has been taken out and a cap, a solid cap put over there to take its place, there is a new method of mixing the water. We put a valve on the hot water pipe and on the cold pipe, and you just turn the two valves when you want to take a bath.

Q. That was done since these photographs were taken? A. Yes, that was done last November.

(Testimony of John B. Morris.)

Q. Referring to the shower-bath as there shown, aside from [291] that change of faucets made subsequently, can you in view of your study of the subject and the experience which you have already indicated, and irrespective of whether or not you have actually seen any improvements or devices elsewhere state whether or not you could suggest any additional facility or method of construction or arrangement of any kind which if incorporated or used in this shower-room would in your opinion be a further safeguard to persons using it?

A. No, sir; none whatever.

Q. As to light, Mr. Morris, what is the—what is the watt power of the light in the ceiling of that room? A. What we would say is 110 volts.

Q. What watt, how many candles?

A. That is about a sixty-watt lamp.

Q. Do you recollect of a trip to the vessel to Honolulu some time ago, his Honor Judge Vaughan, Mr. Cathcart, myself and yourself visited this shower-room? A. Yes, sir.

Q. Do you recall that a light was burning in the ceiling at that time? A. Yes, sir.

Q. I will ask you to state to the Court whether the strength of the light as existing at that time is different in any respect from the strength of light when the vessel is at sea?

A. Well, in port we carry a lower voltage on the ship.

Q. In port?

A. In port, yes, probably ten volts less. [292]

(Testimony of John B. Morris.)

Q. Does that make any difference in the degree of light? A. Just a little.

Q. Now, Mr. Morris, you have not named the vessels on which you have served as engineer. Will you please name a few of them? A. As chief engineer?

Q. Yes.

A. The "Siberia," "Rose City," "Lurline," "Northern Pacific"—

Q. Northern or North?

A. Northern, and the "Great Northern."

Q. And as first assistant, on what passenger vessels?

A. "Siberia," "Wilhelmina" and the "Columbia"; that's all.

Q. Did any of those vessels which you have named have a place for passengers to take showers?

A. No, sir; excepting over the bath-tubs, not any regular shower.

Q. No; you say except over the bath-tubs, what kind are those?

A. A shower arranged to play into the bath-tub while a person is standing in it.

Q. What kind of a bath-tub?

A. Just the ordinary porcelain tub.

Q. As to vessels having shower compartments or shower-rooms of this kind, what vessels do you know have them? A. I have not been on any.

Q. Except what?

A. Except the "Great Northern" and the "Northern Pacific."

Q. Except the "Great Northern" and the "North-

(Testimony of John B. Morris.)

ern Pacific"? A. Yes, sir.

Q. State whether or not in your opinion the shower arrangements [293] —I withdraw that question. Will you state how in your opinion from the standpoint of safety a shower over a porcelain bath-tub compares with a shower compartment as shown by this photograph?

A. They would have more chance to hold on to something in this shower than in an ordinary bath.

Q. Do the showers on the "Great Northern" differ in any way from those on the "Northern Pacific"?

A. No difference.

Q. You have given us a statement the other day of the number of passengers, approximately, who had travelled within a certain length of time on the "Great Northern." Do you know approximately the number of passengers who have travelled on the "Northern Pacific"?

A. I should say a similar number.

Q. How many shower-rooms are there on the "Great Northern" of this character?

A. You mean individual showers?

Q. Yes.

A. About eighteen altogether, I think.

Q. And how many on the "Northern Pacific"?

A. The same thing.

Q. Have you, prior to the complaint of the accident to Mr. Hutchins, known of any complaint to be made concerning a shower compartment on either of the vessels, the "Great Northern" or the "Northern Pacific"? A. No, sir.

(Testimony of John B. Morris.)

Q. Do you know how frequently those shower-rooms are used by the passengers? [294]

A. They are used continuously by the passengers while the passengers are on there, nights and mornings.

Q. I started to ask you, I think, awhile ago, if you had had a conversation with a man, a steward formerly on the vessel named "Francis Lefebre"?

A. Yes, sir.

Q. Do you remember having any conversation with him about the end of March, 1916, on board the "Great Northern" while she was in Honolulu?

A. No, sir.

Q. —upon the subject of the shower-bath used by Mr. Hutchins? A. No, sir.

Q. Do you know whether—would you be able to state whether you merely do not remember, or whether you did or did not have such a conversation?

A. No, sir; I did not.

Mr. Morris, Mr. Lefebre, having been called as a witness in this case, testified as follows: That he did have such a conversation with you in Honolulu and right after that—I withdraw that. Mr. Lefebre has testified he visited the shower in Honolulu with Mr. Hutchins, and further, right after that I went in the chief engineer's room and I told him that Mr. Hutchins came down and he asked me what for. "Well," I said, "He wants to see the shower-bath, to see for himself that there was no handle," so Mr. Morris said, "There must be one," and I said to Mr. Morris, "Mr. Hutchins and I just looked but we

(Testimony of John B. Morris.)

didn't see any," so Mr. Morris said, "There must be one." I says, "If you don't believe me come and see," so he went to see in [295] the shower-bath. What is the fact about that?

A. No truth in it whatever.

Q. Did any part of that conversation occur—

A. No, sir.

Q. —at any time? A. No, sir.

Q. Now, did Lefebre at that time or any time show you the shower-bath? A. No, sir.

Q. He testifies further: I showed him myself, I went inside the shower-bath and I said I showed him that there was none. What have you to say about that? A. No truth in it at all.

Q. Is that true or not?

The COURT.—He answered, no truth in it at all.

Mr. WARREN.—Now, did the witness Lefebre call you by telephone a few days prior to the time he testified as a witness in this case last October?

A. Yes, sir.

Q. What was it?

A. I don't remember the date.

Q. Do you remember what day of the week?

A. No, sir; I do not.

Q. What was that conversation you had with Mr. Lefebre?

A. The phone rang in my office and I asked who was speaking, and he said Francis. I asked who, and he told me his name, Francis Lefebre, and I had never known his name except the name Francis. I says, "What do you want?" and he says, "Do you

(Testimony of John B. Morris.)

remember me?" and I says, "No, I don't think I do"; so he says, "I am Francis, who used to be your boy [296] on the ship." "Oh," I says, "Yes, I know you now." I says, "What do you want, Francis?"and he says, "I wanted to call you up," he says, "to tell you about Mr. Hutchins," he says. "Mr. Hutchins has been good to me," and he told me that Mr. Hutchins has gotten him a position at Del Monte during the summer and had asked him to testify as to taking me in the shower and showing me the shower on the "Great Northern," and then he continued his conversation and says, "You know, Mr. Morris, I always liked you and I wouldn't want to testify in any way that would hurt you," so I says, "How do you figure this is going to hurt me, Francis?" "Well," he says, "the way I am to testify is that I took you in the shower and showed you there was no grab-handles there," and he says, "I don't like *to that,"* and I says to him, "Francis, whatever you do testify you want to testifying the truth; if you don't you are liable to go to jail for it," and I says, "Whatever you do tell the truth; if you are put on the stand you just tell the truth about everything you know." Well, he gave me the impression then that he would, that he wouldn't testify—

Mr. DAVIS.—I object to that and move it be stricken out.

The COURT.—Without giving your impression, state the circumstances.

Mr. DAVIS.—I ask your Honor for a ruling.

Mr. WARREN.—No objection. State your best

(Testimony of John B. Morris.)

recollection what he said regarding that whether or not—

A. My conversation ended right there, when I told him he better testify to the truth. [297]

Q. Now, Mr. Morris, Mr. Lefebre testified as follows: Q. "Did you tell Mr. Morris about that"—I will have to go back. Mr. Lefebre says, "I did not, but I told Mr. Morris"—this is by telephone—"Mr. Morris always been very nice to me and once I said I was very sorry to go against him because he was a builder of two ships and I did not feel like going against him, but yesterday I phoned him and I told him I was going to testify in Mr. Hutchins' case. 'Well,' he said, 'it is up to you, but I hope you will only tell the truth.' I says, 'Certainly, Mr. Morris, I will tell the truth.' He said to me, 'You know very well the handles were there four months before the accident happened.' I said, 'Mr. Morris, I give you my word the handles were not there for Mr. Hutchins and I went in the shower-bath and looked for them.' "

Did you have that conversation with him?

A. Yes, I told him, "You know very well, Francis, that the handles were there." He didn't speak of going in there with Mr. Hutchins at all in that conversation.

Q. When you told him that, what did he say?

A. I just simply repeated to have him tell the truth, that's all. I don't think he answered me at all on that.

Q. Mr. Lefebre testified: "Mr. Morris told me

(Testimony of John B. Morris.)

that"—Oh, Mr. Carey puts the question, "State what he said." Answer by Lefebre, "He told me that Mr. Hutchins wanted him to testify that the handles were on the ship while"—wait, I am mixed up on the deposition. I will withdraw that. [298] I will call your attention to that part of his statement which I have already read to you as a whole: "I give you my word that the handles were not there for Mr. Hutchins and I went in the shower-bath and looked for them." Was that a part of that conversation?

A. No, sir; I did not have any continued conversation with him at all. I was too busy and cut him off.

Q. Mr. Morris, when did the "Great Northern" arrive at Hilo on this trip? A. November 20th.

Q. November? A. I mean February the 20th.

Q. What time of day?

A. She arrived at eight-thirty in the morning.

Q. What time did the vessel leave Hilo for Honolulu? A. Shortly after midnight.

Q. How many—what length of time was there for shore leave, passengers having opportunity to go ashore?

A. The passengers probably got off the ship about a quarter past ten to go ashore, and they would be able to stay ashore until half past eleven or twelve o'clock.

Q. What time did the vessel,—that is, at night?

A. Yes, they could come aboard any time before midnight.

Q. What time did the vessel arrive at Honolulu

(Testimony of John B. Morris.)

that trip? A. Ten o'clock the following morning.

Q. The vessel arrived at Honolulu at ten o'clock the following morning; Mr. Morris, do you know personally of any physicians and surgeons practicing medicine in Hilo?

A. I know Doctor Sexton and Doctor Potter. [299]

Q. Doctors Sexton and Potter?

A. And Doctor Irwin.

Q. Have you as an employee of the Great Northern Pacific Steamship Company served in any capacity other than as chief engineer? A. Yes, sir.

Q. Will you state what it was?

A. I served as inspector of the ship in its building and as marine superintendent and as assistant marine superintendent.

Q. Do you know what day these shower-bath grab-handles were put on in the "Great Northern"?

A. Yes, they were put in about January 24th.

Q. Of what year? A. 1916.

Q. How do you know that?

A. Well, I know that from the office files of the marine superintendent.

Q. The date? A. Yes.

Q. Now, aside from the date, do you know whether they were in before or after the trip Mr. Hutchins made? A. It was before that trip.

Q. How do you know that?

A. By the files in the office.

Q. Were you chief of the vessel on that trip?

A. On the trip Mr. Hutchins made?

(Testimony of John B. Morris.)

Q. Yes. A. Yes, sir.

Q. Did you on that trip visit the shower compartment and observe whether or not the handles were there? A. Yes, sir.

Q. And what did you observe as to the handles? [300]

A. That they were in their places.

Q. Do you know Doctor R. J. Macadory?

A. Yes, sir.

Q. He was the ship's doctor on the trip that Mr. Hutchins was a passenger? A. Yes, sir.

Q. And how long prior to that had he been ship's doctor?

A. Since November the 7th,—November the 6th, 1915.

Q. Do you personally know the circumstances connected with his engagement as doctor for the trip?

A. Yes, sir.

Q. Were you present?

A. I was present when he entered my room looking for the marine superintendent, Mr. Wiley, who was sitting on my settee talking business with Mr.—

Q. Pardon me; you say you were marine superintendent at one time? A. Yes, sir.

Q. Will you state if you know whose office or duty it is to engage surgeons for ships?

A. The marine superintendent's.

Q. Yes, and now will you proceed with that statement of the engagement?

A. I was sitting in my room talking business with Mr. Wiley when Doctor Macadory came in the door,

(Testimony of John B. Morris.)

knocked and came in, and he asked for Mr. Wiley. I says, "Here is Mr. Wiley right here," so he addressed Mr. Wiley and said, "I am Doctor Macadory." Mr. Wiley at that time asked him in and shook hands with him and says, "Doctor,"—evidently [301] they had some correspondence on the subject,—and he asked him, he says, "Doctor, have you a certificate for practicing in the State of California," and the doctor answered, "Yes," and he says, "You have been on different ships?" "Yes," and he asked him what places he had been, and he mentioned, I think, two ships of the Toyo Kisen Kaisha.

Mr. DAVIS.—He need not state the conversation these people had together. Does your Honor hold that is testimony? There is no way to deny this.

The COURT.—Yes, I am going to hear all of this proof. He is to be here this week, and I may hear some that I may determine later as immaterial.

Mr. DAVIS.—But I don't think this conversation between these people is evidence and what they done is evidence. No way for us to deny it.

The COURT.—Overruled.

Mr. DAVIS.—We object to it on the grounds that it is hearsay, is incompetent, irrelevant and immaterial, and not tending to prove or disprove any of the issues in this case.

The COURT.—Overrule it.

Mr. DAVIS.—To which ruling I respectfully except.

The COURT.—Exception allowed.

(Testimony of John B. Morris.)

A. I left the room then.

Mr. WARREN.—You say he named some vessels?

A. Yes.

Q. What vessels?

A. I think he named the "Tenyo" and the "Chiyo Maru," I am not [302] positive.

Q. Any other steamship line mentioned?

A. That I am not sure of.

Q. Any other previous service of the doctor?

A. He mentioned the fact that he had been a surgeon at Camp McKinley, an army surgeon in Honolulu.

Mr. WARREN.—Cross-examination.

Cross-examination of J. B. MORRIS.

Mr. DAVIS.—When did he quit the service of the "Great Northern," this Doctor Macadory?

A. He quit on the last voyage of the "Great Northern."

Q. Under what circumstances did he leave the service?

A. The Hawaiian service was finished, and they didn't require a doctor on the coast run, the law doesn't require a doctor on the coast run.

Mr. WARREN.—I would like to ask another question.

Mr. DAVIS.—Sure.

Mr. WARREN.—I would like to ask you, how long did Doctor Macadory serve on the ship, if you know, until she came off the run?

A. Until she came off the run, yes.

(Testimony of John B. Morris.)

Q. And you were serving as chief on board at the same time? A. Yes, sir.

Q. Have you at any time prior to the complaint made concerning the doctor by Mr. Hutchins known of any complaint or [303] objection being made to Doctor Macadory on the ground of his qualifications or competency as a physician? A. No, sir.

Mr. DAVIS.—On the trip of the "Great Northern" from San Francisco or San Pedro to Honolulu via Hilo or any other trip across this ocean, has there been any voyage on which there has been no doctor on that ship? A. No, sir.

Q. Always had a doctor?

A. Always had a doctor across to Honolulu.

Q. Yes, and when did you say Macadory left?

A. He left, I think it was April the 12th, when the ship came off the Honolulu run.

Q. Wasn't he discharged? A. No, sir.

Q. Where is he now, do you know?

A. I believe he is on the Parker Ranch.

Q. Up on the Parker Ranch; what is he doing there?

A. Physician.

Q. Did you see Mr. Hutchins after he was injured on that steamer? A. Yes.

Q. Where? A. That evening.

Q. Where was he?

A. He was in that mock trial.

Q. Yes, and did you notice the position he held his hand in? A. Yes.

Q. How was it, just show the Court.

(Testimony of John B. Morris.)

A. He had his hand in a sling.

Q. Had his hand in a sling? A. Yes.

Q. You don't know who put the hand in the sling? **[304]** A. No, sir.

Q. The doctor didn't do it? A. I don't know.

Q. You don't know? A. No, sir.

Q. Didn't he have his hand in his vest this way, and not in a sling

A. I am certain he had his hand in a sling.

Q. You are certain? A. Around his neck.

Q. You are certain?

A. Well, I wouldn't say positively, but I have that impression.

Q. I see, that is your impression, but at all events his hand was in this position.

A. Yes, sir, as though he was in pain.

Q. Yes. This man Lefebre you speak of, he was your steward on the vessel? A. Yes.

Q. Yes, now, do you know whether Mr. Hutchins was aboard the "Great Northern" in April of 1916?

A. I didn't know of it? Q. Eh?

A. I didn't know of it; no, sir.

Q. You wouldn't say he wasn't?

A. I wouldn't say he wasn't; no.

Q. Was that man Lefebre on board the vessel in April, 1916, when she was here in Honolulu?

A. I don't remember that. Stewards change very frequently and I could not place that he was.

Q. Well, wasn't he your steward at that time in April, 1916? A. I am not sure whether he was.

Q. You can't remember that? A. No. **[305]**

(Testimony of John B. Morris.)

Q. And yet you remember positively enough to state that you didn't have that conversation?

A. I do, certainly.

Q. Your memory isn't very good, Mr. Morris, when you can't remember whether that man was your own steward in April of 1916.

A. Stewards change very frequently; it's pretty hard to keep tab on them.

Q. If you don't remember that, eh, your memory must be pretty poor, isn't it?

A. No, sir; I have a good memory.

Q. A good memory; who was your steward in April of 1916, when your steamship was here in Honolulu? A. I don't know.

Q. You don't know. These handles on these bath-tubs that contain the shower are over there on the side of the wall, are they not?

A. On the back of it.

Q. No, I mean the ordinary bath-tub where there is a shower over it that Mr. Warren was asking you about, the handles are on the side of the wall, ain't they? A. Yes.

Q. They are about two feet long?

A. No, sir; not in the "Great Northern."

Q. I am talking of other steamers; how long are they, these handles?

A. They are generally big enough to enclose your hand.

Q. I asked you how long they are, lengthwise, this way. A. Six inches long. **[306]**

Q. Ain't they a foot? A. No, sir; not always.

(Testimony of John B. Morris.)

Q. Well, a good many of them?

A. Some of them are.

Q. And the handle is of wood, isn't it?

A. Not always; sometimes brass and plated.

Q. But mostly wood, ain't they?

A. Sometimes.

Q. And they project quite a distance from the wall? A. Yes, about two and a half inches.

Q. Yes, further than these handles on this shower-bath where this accident—where this is crossed?

A. Sometimes; it all depends on the strength of them.

Q. Exactly, and in a good many instances they project further than this handle? A. Yes.

Q. How long do you say this handle is?

A. I should say five inches.

Q. Was you in this shower-room on the morning of the 18th or any time during the day that Mr. Hutchins was injured? A. I was in there on the 19th.

Q. But I asked you on the 18th, was you in there?

A. No, sir.

Q. Well, the day of the 19th when you went in, you didn't have hold of any handle, did you?

A. No, sir.

Q. No; you stated positively, Mr.— will you state positively that Lefebre did not come into the engine-room on the day that Mr. Hutchins was aboard the "Great Northern" and have any conversation with you about these handles? A. Yes, sir.

Q. You positively state that your memory is fresh in that? [307] A. Yes.

(Testimony of John B. Morris.)

Q. What is there that recalls that? You are in position to deny that absolutely when you don't know whether he was on the boat or not; just explain it, please.

A. I know I never had any conversation of that kind with him.

Q. Yet you don't know whether he was your steward at that time? A. No, sir.

Q. Yes; well, is there anything to recall why you didn't have that conversation with him, does anything suggest itself—remember this witness is remarkable, Mr. Warren—is there anything to recall it specially to your mind?

A. Nothing at all.

Q. I suppose you had a conversation with your steward most every day while he was on the ship, didn't you, more or less? A. Very little.

Q. Well, he spoke to you, didn't he?

A. Oh, he would say "Good morning."

Q. He would say good morning, and if there was anything wrong, and he call your attention to anything he did, he did it, didn't he?

A. He didn't have anything to call my attention to, the chief steward would.

Q. But do you mean to tell me that your steward who was employed to look after you, didn't visit the engine-room sometimes? A. No, sir.

Q. He never was in there during the trip, eh? [308] A. No, sir.

Q. And he never was in your office on the steamer?

A. He was in my office every day.

(Testimony of John B. Morris.)

Q. Yes, he was in your office every day, and you talked to the man? A. No, sir.

Q. You never said anything to him?

A. No, sir; just to say good morning to him.

Q. That's all, eh? A. Yes.

Q. And you swear you never said anything else to that man Lefebre except good morning, you swear to that?

A. I generally say good morning to him, but I got no occasion to talk to him.

Q. Well, will you swear that you never had any other conversation with him? A. No, I won't.

Mr. DAVIS.—No, I should think not.

The COURT.—Take a recess for five minutes.

AFTER RECESS.

Mr. WARREN.—As to my motion for a deposition in the case, I am ready to forward the written interrogatories.

Mr. DAVIS.—All right; let's have the written interrogatories.

Mr. WARREN.—A formal order will be entered this afternoon as made this morning. I will stand on my motion as made.

The COURT.—All right; the motion is granted.

Mr. DAVIS.—I will ask Mr. Warren to be good enough and that he be given until Friday morning to file his interrogatories and me until Saturday morning to file my cross. **[309]**

Mr. WARREN.—I agree to that, your Honor.

(Testimony of John B. Morris.)

The COURT.—All right; proceed with the case, gentlemen.

Mr. DAVIS.—Now, Mr. Morris, you wasn't in that bath-room on the 18th of February to make any inspection as to whether or not the surface of it was slippery or otherwise; I mean of your own personal knowledge, on the 18th of February? A. No, sir.

Q. No. Now, when a bather is standing in the shower-bath where this accident happened, that is—after he gets in with his face to the wall, has he got any chance to catch hold of that rod you were talking about where the curtain is, after he is in, mind you?

A. Yes.

Q. Ain't it right behind him?

A. Yes, behind him.

Q. Yes, and he would have to reach back this way, wouldn't he? A. Yes.

Q. How high is that rod?

A. Probably six foot six high.

Q. Yes, and if a man was slipping or falling he would have to throw his hands up this way?

A. Well, he could use that grab in front of him.

Q. Never mind that grab; I am talking about the rod now. A. Yes.

Q. He would have to put his hands behind him, eh?

A. Yes.

The COURT.—To catch the rod?

A. Yes, to hang by the rod.

Mr. DAVIS.—It's not directly over his head?

A. If he is falling he is under it. **[310]**

Q. But it is not directly over his head?

(Testimony of John B. Morris.)

A. No, sir.

Q. Therefore he would have to put his hands back this way? A. Yes.

Q. That is almost a physical impossibility, isn't it,—don't you know now that that's almost physically impossible for a man to do that?

A. If he is falling it isn't.

Q. Eh?

A. If he is falling it isn't.

Q. Putting his hands behind him and grabbing that way, you say that's not impossible?

A. If he is falling it is right over his head.

Q. Oh, it's inside? A. Yes.

Q. Right over his head when he starts to fall?

A. Yes.

Q. Therefore it's almost impossible to grab it?

A. No.

Q. It is not impossible? A. No.

Q. It could be done? A. Yes.

Q. But not the natural way for a man to do, is it?

A. No.

Q. That's fair; it's not the natural thing for a man to do and would be the last thing for him to do, wouldn't you think so, to shove his hands behind him?

The COURT.—What a man may think about when he is falling is a matter you need not question the witness about.

Mr. DAVIS.—I want it on the record, and if this case goes up I want it to go up right. **[311]**

(Testimony of John B. Morris.)

The COURT.—The position of it is all right to put in, I think.

Mr. DAVIS.—The position,—all right. The side of that bath-tub where these pipes will be, Mr. Morris, there is hardly room for a man to get his hand in behind, is there?

A. Plenty room.

Q. Plenty room, how far are they from the side of the marble slab?

A. I should say two and a quarter inches.

Q. Have you ever measured it?

A. No, sir; I judged it with my eye.

Q. I know, but you never measured it? A. No.

Q. And you don't know? A. No, sir.

Q. That's just the case, eh?

A. I remember looking at it and judging the distance.

Q. Now, they took out those handles on the valve, didn't they? A. They took out the handle, yes.

Q. Because people are apt to turn on the hot water with it, isn't that the reason?

A. On account of the difficulty in mixing, too much trouble to overhaul them. They leaked and wouldn't mix properly so we thought the better arrangement was to put two valves on.

Q. And the pipes that run up the side of this marble slab you talked about, one is hot water?

A. Yes.

Q. Which one?

A. The one furtherest from you. **[312]**

Q. The furtherest one, and the one a man would

(Testimony of John B. Morris.)

be likely to catch hold of first? A. No.

Q. I mean if he was in?

A. He would catch hold of the opposite one first.

Q. But the hot water is the closest to him?

A. No, sir; the cold water is closest to him.

Q. The cold water is the outside one?

A. The cold water is the outside one.

Q. Yes, but if he is in the shower-bath you mean to tell me that the cold-water pipe is as near to him than the other? A. Nearer to him, I should judge.

Q. Ever try it?

A. Yes, I have been in there.

Q. Yes, and you will swear that the outside pipe is closer to your hand than the inside one, will you?

A. I would say so, yes, sir.

Q. But you are inside the shower, in the compartment?

Mr. WARREN.—I object to that as being asked and answered.

Mr. DAVIS.—Ain't you?

A. Yes.

Q. You are inside and facing the wall and these pipes are right alongside, ain't they? A. Yes.

Q. Yes, three of them? A. Three of them.

Q. And it would be on the left in that particular shower? A. Yes.

Q. Now, here is your right hand on this side; now, which would be the nearest to the right hand the outer or the inner pipe? **[313]**

(Testimony of John B. Morris.)

A. Well, I am figuring his left hand is nearer to the pipes.

Q. How about the right?

A. Well, the right hand is on the other side altogether.

Q. Well, which would be the nearer to the right?

A. Well, any of them for that matter; all the same distance.

Q. Wouldn't the hot water be closest to his right hand if he was reaching around facing the wall?

A. All the same distance.

Q. The same distance? A. Yes.

Q. Wouldn't it be more convenient for him to catch the hot-water pipe first? A. No, sir.

Q. You swear to that, will you? A. Yes.

Q. Because the Judge was in there?

A. All right.

Q. How old are you, Mr. Morris?

A. Forty-five.

Q. Where did you study engineering?

A. I started in a machine-shop.

Q. Eh?

A. I started in a machine-shop serving time as an apprentice, as a machinist.

Q. Where, Mr. Morris?

A. At the Vulcan Iron Works, San Francisco, California.

Q. Pretty hard for you to remember a conversation and everything that happens on a vessel like that, a big vessel like that where you have responsibility as a chief engineer, isn't it?

(Testimony of John B. Morris.)

A. Sometimes.

Q. Yes, but there are certain things you will always remember, eh, some things are impressed on your memory? [314] A. Yes.

Q. But one thing you do remember, you didn't see the handle in that bath-room on the 18th of February, did you? A. Not on the 18th.

Mr. DAVIS.—No; that's all.

Mr. WARREN.—That is all.

The COURT.—Stand aside, Mr. Morris? [315]

Testimony of Thomas S. Mills, for Libelees.

Direct examination of THOMAS S. MILLS, for libellees, sworn.

Mr. WARREN.—Mr. Mills, you say your full name is Thomas S. Mills?

A. Yes, sir.

Q. Was your testimony taken at San Francisco last October? A. Yes, sir.

Q. Your name appears here as C. S. Mills.

A. T. S. Mills.

Q. What is that? A. It should be T. S. Mills.

Q. That is an error? A. Yes, an error.

Q. You are the chief steward of the steamship "Great Northern"? A. Yes, sir.

Q. And how long have you been holding that office? A. Since the 10th of August, 1915.

Q. Were you holding that position in the month of—

Mr. DAVIS.—That is all admitted, your Honor, I thought he called him about the handles.

(Testimony of Thomas S. Mills.)

Mr. WARREN.—February, 1916?

A. Yes, sir.

Q. Do you personally know the shower compartment on C deck of the steamship "Great Northern"?

A. Yes, sir.

Q. Would you be able to identify a photograph of that shower compartment? A. Yes, sir.

Q. Look at Claimant's Exhibits 1, 2 and 3 attached to the **[316]** deposition of Mr. Scott, now before you, and ask you if you know what that represents?

A. That is the shower-bath on C deck.

Q. I call your particular attention to a grab-handle or iron appearing on the back wall of the shower compartment, as shown in each of these pictures, and I will ask you directly do you know of your own knowledge whether or not that handle was in that compartment on the voyage and before the ship sailed on the voyage on which Mr. Hutchins was a passenger? A. Yes, sir.

Q. Did you personally—how do you know that, can you state what circumstance fixes that in your mind?

A. Yes, sir, I made the requisitions out for it and checked the requisitions up before we sailed and the time they was put on—

Mr. DAVIS.—It's incompetent, irrelevant and immaterial about the requisitions.

The COURT.—Objection overruled.

Mr. DAVIS.—Exception, your Honor.

The COURT.—Allowed.

Mr. WARREN.—Did you personally inspect that

(Testimony of Thomas S. Mills.)

shower-room after the handles were put on and before the vessel sailed on that trip with Mr. Hutchins? A. Yes.

Q. When did you make that inspection?

A. On the morning we sailed, on the morning of the 25th of January.

Q. On what day was that handle put on, do you know? **[317]**

A. Why, they started on them on the—we got in on the 20th, and they—

Mr. DAVIS.—No use taking up time with that.

A. The requisition was put in on the 20th for them and they were finished on the 25th, the morning of the 25th.

Mr. WARREN.—Did you personally see that handle in there on the morning of the 25th?

A. Yes, sir.

Q. Did you personally see the work being done?

A. I did.

Q. Was that in any way connected with your official duty on the ship? A. Yes, sir.

Q. Have you with you the original requisition you made for these handles? A. Yes, sir; I have.

Q. Will you produce them? A. Yes, sir.

Q. You have now handed me one, two, three, four, five, six, seven—seven sheets of paper fastened together with a pin, and you have pointed particularly to page,—to the sixth page. A. Yes, sir.

Mr. WARREN.—I would like to offer these in evidence.

(Testimony of Thomas S. Mills.)

Mr. DAVIS.—That's the requisition for the handles?

Mr. WARREN.—Yes.

The COURT.—What is the date of it?

Mr. WARREN.—I would like to just indicate this to your Honor. This requisition is a purchase requisition dated February 21, 1916— **[318]**

A. The date on the bottom, Mr. Warren.

Q. What is that date, February 21, 1916?

A. That is my order number, S–27.

Q. What is February 21, 1916?

A. That is when the bills were vouchered, I presume.

Q. Vouchered?

A. When the bills were accepted.

Q. What is the date of the requisition?

A. January 20, 1916.

Q. I see, down below? A. Yes.

Q. This is your own signature, T. S. Mills, on this requisition? A. Yes, sir.

Q. Chief Steward, January 20, 1916?

A. Yes, sir.

Mr. DAVIS.—No objection to it going in the evidence, your Honor.

Mr. WARREN.—That requisition having been made, do you know personally of the work being done? A. Yes, sir.

Q. After the work was done did you know of any bill being rendered for the work?

A. Yes, sir, I do; I had to O. K. the bill before it was accepted.

(Testimony of Thomas S. Mills.)

Q. Did you O. K. the bill? A. I did.

Q. Before O. K.'ing the bill, did you make an inspection before or after O. K.'ing the bill?

A. Before I O. K.'d the bill.

Q. Have you the bill? A. Yes, sir.

Q. Produce it.

A. The original bill is attached to the requisition.

[319]

Q. Will you please with a pencil mark in the right-hand margin opposite the item of cost the item which covers these grab-handles? You have now marked on page—the third page of this set of papers and the second page of the bill— A. Yes.

Q. The date of this bill is January 25, 1916. The item indicated by the witness, ten nickel-plated pulls, $7.10. Does that item relate to these particular handles of which that one is one?

A. Yes, sir.

Q. On this bill in the lower left-hand corner are the words, O. K., T. S. Mills, Chief Steward. Is that your signature? A. Yes, sir.

Q. When did you put that on?

A. 25th of January.

The COURT.—It will be admitted.

(Marked Libellees' Exhibit 1.)

Cross-examination of THOMAS S. MILLS.

Mr. DAVIS.—Did you have any conversation with Lefebre after the accident to Mr. Hutchins on the 18th of February?

A. No, sir.

Q. Never saw him afterwards?

(Testimony of Thomas S. Mills.)

A. I seen him; yes, sir.

Q. Yes, but you never talked to him, eh?

A. No.

Q. Didn't you indicate to him that he would be appointed as [320] deck steward if he didn't testify? A. I did not.

Q. Were you in that bath compartment, that shower-bath compartment on C deck where the accident happened to Mr. Hutchins, on the morning of the 18th of February? A. I was.

Q. You was in there? A. Yes.

Q. Take a bath? A. No, sir.

Q. What was you doing there?

A. Going in there for inspection.

Q. What time was it? A. Eleven o'clock.

Q. About eleven o'clock in the morning, eh?

A. Yes.

Q. Went through, eh? A. Yes.

Q. And how many other bath places did you inspect, shower-baths, that morning?

A. Every one in the first cabin.

Q. How many altogether, approximately?

A. Three.

Q. Three? A. Yes.

Q. But how many compartments?

A. How many?

Q. Yes. A. Six.

Q. On all the decks? A. Yes.

Q. And C deck three, eh? A. Three baths.

Q. All there is on the ship?

A. No, sir shower-baths in the first cabin, four in

(Testimony of Thomas S. Mills.)

A deck, rooms connecting with private rooms.

Q. Did you go through all of those? A. No, sir.

Q. Only just these public ones?

A. Yes, sir. **[321]**

Q. And did you—is there any in the second cabin?

A. Yes, sir.

Q. Did you inspect there? A. No.

Q. Who was with you? A. The captain.

Q. The captain and you just passed around through, eh? AR. Yes.

Q. Didn't spend much time going through the whole ship, eh? A. No we didn't lie on the job.

Q. You make a regular morning inspection on the steamship "Great Northern," you and the captain and the doctor? A. No, the captain and myself.

Q. The captain and yourself alone, eh? A. Yes.

Q. And you had to make an inspection of the whole business, the whole ship? A. No.

Q. Well, what portion did you and the captain inspect that morning? A. The saloon.

Q. And the bath places? A. The baths.

Q. And the staterooms?

A. Staterooms unoccupied.

Q. How many staterooms? A. Unoccupied?

Q. How many unoccupied staterooms?

A. I couldn't say.

Q. And how often do you have to do that?

A. We don't have any certain time.

Q. How long did it take you on that particular morning?

(Testimony of Thomas S. Mills.)

A. It might have taken twenty minutes, it might have taken forty minutes.

Q. You are not positive of it, eh? A. No. [322]

Q. You don't remember whether it was twenty or forty minutes, yet you remember everything in connection with this particular bath, this compartment where Mr. Hutchins—

A. My business is to check up, and make bills and requisitions.

Q. I am saying that morning of the 18th you observed everything but you don't remember how long the inspection took, but you remember everything about that C deck bath on that deck, that bath on C deck where the accident happened to Mr. Hutchins, you remember all about that?

A. It is my business to remember that. I go in these baths six or seven times a day to make inspection.

Q. Was you six or seven times in on that day?

A. I might have only been in three times on that day.

Q. But how many times were you in, can you remember?

A. No, sir; not exactly. I go in there periodically.

Q. Yet you know that handle was there?

A. Certainly.

Mr. DAVIS.—That's all; that's all for you.

Mr. WARREN.—That is all.

The COURT.—Stand aside.

Now, gentlemen, have you offered all the witnesses here on this boat?

Mr. WARREN.—These are all the witnesses I have from the ship, your Honor.

Mr. DAVIS.—I would like to get some information from counsel about the depositions he is going to apply for. How many other witnesses have you got? **[323]**

The COURT.—The Hutchins case will be continued until Monday morning at nine o'clock. **[324]**

In the District Court of the United States, in and for the Territory of Hawaii.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," etc.,

Libellees.

Honolulu, H. T., Friday, February 23, 1917.
10 A. M.

Mr. WARREN.—I would like to refer at this time to the case of Hutchins against the "Great Northern," and state by reason of having ascertained that Mr. C. W. Wiley, whose deposition I desire to take, has moved from Portland to Seattle, I have prepared and filed supplementary affidavit stating that fact. I also submit the direct interrogatories proposed.

Mr. DAVIS.—When I get my cross-interrogato-

ries in, your Honor, I will send them on. I will have them in to-day.

The COURT.—All right, gentlemen. **[325]**

In the United States District Court, in and for the Territory of Hawaii.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," etc.,

Libellees.

Honolulu, H. T., Saturday, February 24, 1917, 11:30 A. M.

Mr. DAVIS.—One cross-interrogatory, No. 10, Mr. Warren objects to.

Mr. WARREN.—My particular objection is regards the word "success." I think it should be changed to "financial success," otherwise the answer may be irresponsive.

Mr. DAVIS.—I stipulate in open court that the cross-interrogatories are satisfactory to me. I move these be sent away by the clerk to-day to the United States Commissioner at Seattle.

The COURT.—Let the order be made.

Mr. WARREN.—To any notary public duly sworn and licensed, or to any commissioner. **[326]**

In the United States District Court, in and for the Territory of Hawaii.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," etc.,

Libellees.

Honolulu, H. T., Monday, February 26, 1917, 2:00 P. M.

Testimony of Robert B. Booth, for Libelees.

Direct examination of ROBERT B. BOOTH, for libellees, sworn.

Mr. WARREN.—Mr. Booth, you are an officer of F. L. Waldron, Limited, of Honolulu?

A. Yes, sir; I am the treasurer of the company.

Q. Your company are agents for the Great Northern Pacific Steamship Company at this port?

A. Yes, sir.

Q. Did you have a conversation with Mr. C. J. Hutchins at your office in the month of February, 1916, in regard to [327] the surrender by him of his return ticket on the "Great Northern"?

A. Yes, I did.

Q. Will you please state as nearly as you can just when that was and what it was?

Mr. DAVIS.—I object to the evidence as incompetent, irrelevant and immaterial, and not tending to

(Testimony of Robert B. Booth.)

prove or disprove any of the issues in this case.

Mr. WARREN.—The purpose of the question, your Honor, is this: one of the allegations of the complaint as to damage is to the effect that the complainant was by this accident prevented from returning to San Francisco as he had contemplated, and was obliged to remain over in Honolulu to his damage, and I want to show a conversation between himself and the company at the time of the return bearing directly on the point of the reason for his making that change.

The COURT.—The testimony is all right; overrule the objection.

Mr. DAVIS.—Kindly allow me an exception, your Honor.

The COURT.—Yes, I allow the exception; proceed.

Mr. WARREN.—Answer, Mr. Booth; when was it and what was it, as near as you can remember.

A. As near as I can recollect, Mr. Hutchins came into our office a day or two, somewheres around there after the "Great Northern" arrived.

Q. February 19, 1916?

A. I think she arrived on the 20th, the 19th or 20th—I have forgotten now—but it was a day or so after the boat arrived that Mr. Hutchins came in the office, I think with [328] his wife, if I remember correctly. We were then in our old quarters, 816 Fort Street, and I have known him for a good many years, and I was sympathizing with him for his pilikia, and he said he wanted to cash his tickets, his

(Testimony of Robert B. Booth.)

return trip tickets, he wanted to cash them in the office, and it was either on a holiday, either Washington's Birthday or else,—I believe it was Washington's Birthday, or on a Saturday afternoon, anyhow the banks were closed, I think, but to make a long story short I gave Mr. Hutchins $75.00 and took an I. O. U. for it, he wanted to go to Hilo, and I said when you get back you will get the tickets all right and everything was satisfactory, but when I—as near as I can recollect now, when I asked him why he cashed his tickets he gave me to understand—

Mr. DAVIS.—I object to what he understood, it is what he said.

The COURT.—I sustain the objection, just state what he said.

A. That he had some business to transact, that he couldn't get through in time to go back on the "Great Northern" that trip, that was the substance of it.

Mr. WARREN.—In that conversation, did the subject of his accident or injury come in for discussion at all, further than you have mentioned?

A. I don't recollect now, I know naturally I spoke to him about his accident, because it was the first time I had seen him after his return and I naturally spoke about his accident.

Q. What reply if any did he make to that comment, how did he reply? [329]

A. He told me he slipped in the bath-room and dislocated it, as I understood it at the time, dislocated his shoulder.

Q. Do you recollect whether he had his arm

(Testimony of Robert B. Booth.)

wrapped up at the time?

A. I think at that time he had a black silk handkerchief, his arm in a black—I wouldn't be sure about that.

Q. You have given that conversation substantially as it occurred?

A. Yes, sir, as near as I can recollect.

Cross-examination of ROBERT B. BOOTH.

Mr. DAVIS.—What time did the "Great Northern" arrive here on that trip in February, 1916?

A. I think she arrived on the—I am not sure, but I think she arrived on the 21st.

Q. Yes. A. Is that right?

Q. Well, I think it is. That is as near as you can remember?

A. Yes, I think the "Northern Pacific" arrived on the 22d, the following day.

Q. Now, when did you say that conversation was held?

A. It was very soon afterwards; it might have been the following day. I am under the impression that it was on Washington's Birthday.

Q. Well, I want to know are you positive?

A. I couldn't tell you any more than I am telling you now, as to whether it was the following day or Washington's [330] Birthday.

Q. Will you undertake to swear positively it was not a week afterwards?

A. Certainly I will not.

Q. And do you know whether or not this accident was—that this accident was the cause of Mr.

(Testimony of Robert B. Booth.)

Hutchins' delay so that he couldn't return?

A. Do I know that?

Q. Yes.

A. Do I know that the accident was the cause of his delay?

Q. Will you swear it was not because of this accident that he could not return on the "Great Northern" to use his return ticket—wait until I ask the question. Read the question, please.

(Last question read.)

A. From the conversation I had with Mr. Hutchins, I gathered that it was business and not his accident that kept him over, the reason he couldn't make his return on the "Great Northern."

Q. And will you swear positively that was the sole reason? A. I am telling you what he told me.

Q. I am asking you will you swear positively—

A. How can I swear positively to something I don't know anything about. I don't know whether his accident kept him over here or not.

Q. Then say so; that's what I am asking you.

A. It is not a fair question.

Q. That is not for you to judge. It is for the Judge of this court to decide and not for you to say it is not a fair [331] question. How long have you been connected with Waldron and Company?

A. Ever since its incorporation, January 2, 1912.

Q. How old are you? A. Thirty-nine.

Q. Yes; had you known Mr. Hutchins previously to this time? A. A number of years.

Q. How long have you been in Honolulu?

(Testimony of Robert B. Booth.)

A. Nineteen years.

Q. You talked to Mr. Hutchins about this broken —dislocated shoulder, as you call it, did you?

A. Why certainly.

Q. Yes, and didn't Mr. Hutchins tell you that he had to go and see the doctors here and have it bound up and attended to? A. I don't remember.

Q. You don't remember that? A. No.

Q. You don't know whether or not that took place, that conversation I have—

A. That he had to go to the doctors to have it attended to?

Q. Yes. A. No, I couldn't swear to that.

Q. But it might have taken place? A. Yes.

Q. And did he also say to you, that having had to get medical and surgical attendance that he couldn't possibly go back on the "Great Northern"?

A. I don't remember that.

Q. Will you swear he did not tell you that?

A. I am on my oath, and to the best of my knowledge and belief and to the best of my recollection he didn't tell me that. [332]

Q. Will you swear he didn't? Yes or no. You can't? I would like to get an answer, yes or no, did he tell you that—

A. Mr. Davis, the dates are so far back I certainly cannot swear to anything like that any more than I could have sworn a little while ago, that it was because of his accident that he was kept here.

Q. Yes, and you won't swear that he told you that at the time? A. No, sir.

(Testimony of Robert B. Booth.)

Mr. DAVIS.—That's all.

Redirect Examination of ROBERT B. BOOTH.

Mr. WARREN.—Have you the slightest recollection of such a conversation having taken place between yourself and Mr. Hutchins?

A. I don't remember it.

Q. But the conversation you testified to on direct examination you remember very clearly?

Mr. DAVIS.—I submit that is leading, and object to it on the grounds that it is leading.

The COURT.—It is leading.

Mr. WARREN.—If any such a conversation had taken place do you feel confident that you would recall it?

Mr. DAVIS.—I submit that is not an interrogatory, that the word if is never allowed in an interrogatory unless for explanatory purposes and that it is not a proper [333] interrogatory to propound to the witness on redirect examination and I object to the form of the question.

The COURT.—It is really objectionable on those grounds.

Mr. WARREN.—I have no further questions, your Honor.

Mr. DAVIS.—That is all. [334]

Testimony of Frederick Lamb, for Libelees.

Direct Examination of FREDERICK LAMB, for libellees, sworn.

Mr. WARREN.—Your name, please.

A. Frederick Lamb.

(Testimony of Frederick Lamb.)

Q. Mr. Lamb, were you present at a conversation between Mr. C. J. Hutchins and Mr. Robert B. Booth,—I withdraw that and will ask you where you are employed, Mr. Lamb.

A. F. L. Waldron, Limited.

Q. For how long?

A. Oh, about a year and a half.

Q. Are you connected with the ticket department of that company for the Great Northern Pacific Steamship Company? A. Yes, sir.

Q. Were you present at a conversation between Mr. C. J. Hutchins and Mr. Booth in your office in the month of February, 1916, regarding the return coupon of Mr. Hutchins' ticket on the "Great Northern"? A. Yes, sir; I was.

Q. Will you please state what you heard of that conversation?

A. Well, he came in there, I think it was either on a holiday or a Saturday afternoon, probably on a Saturday afternoon,—probably it was a holiday, a legal holiday, or a Saturday afternoon, because the banks were closed, I think, however, it was a Saturday afternoon, for the simple reason that I was going away to Hilo, and he turned in his tickets to Mr. Booth and he was joking with Mr. Booth at the time and got a loan from him of $75.00 on the return ticket. I thought at first it was rather peculiar he didn't ask [335] for the return money, but instead of that he took $75.00 from Mr. Booth and Mr. Booth handed me the I. O. U. for the $75.00 and I

(Testimony of Frederick Lamb.)

give him the cash. The two were joking together at the time.

Q. That trip to Hilo was on the "Northern Pacific"?

A. Yes, that was it. It was on Saturday, on the "Northern Pacific." That was Saturday afternoon when he came into the office and turned in the tickets and didn't ask for any cash, and Mr. Booth handed me the two tickets and said, "These are for refund," and they were joking together, and Mr. Booth says, "Give him $75.00 and I will give you his I. O. U.," and he handed me the I. O. U., and we didn't hear any more.

Q. Mr. Booth said to you to give him $75.00?

A. Yes, and I handed him $75.00 and he turned it over to Mr. Hutchins, and they continued laughing and joking together. I didn't hear anything that took place, but it seemed to me,—I wouldn't like to swear to any actual statements for the simple reason that I can't tell exactly the words that took place.

Q. I did not ask you to give the exact words of the conversation. State the substance as near as you can.

A. Well, the substance appeared to me—

Mr. DAVIS.—I submit that is incompetent.

Mr. WARREN.—Just as near as you can remember the substance of what he said.

A. Well, the substance of it was this, that he wasn't returning because he had some business here or because his business wouldn't be finished by that day. [336]

(Testimony of Frederick Lamb.)

Mr. DAVIS.—If your Honor please, I move to strike the answer out; it is the conclusion of the witness and therefore is not proper and competent evidence.

The COURT.—Of course, the witness does not undertake to repeat the words. It is legitimate testimony for him to give the substance of the conversation according to his best recollection.

A. Both mean the same. If you like, I can strike out the "or" or cut the first, it is immaterial.

Mr. DAVIS.—The Judge will decide that, not you.

The COURT.—Objection overruled.

Mr. DAVIS.—To which ruling I respectfully except.

The COURT.—Exception allowed.

Mr. WARREN.—Is that all the conversation you remember? A. Yes.

Cross-examination of FREDERICK LAMB.

Mr. DAVIS.—Were you also sympathizing with Mr. Hutchins?

A. I didn't know, I think, until a couple of months afterwards about this accident.

Q. You can't remember the exact conversation that took place, it being so long ago?

A. No, I cannot.

Q. How old are you? A. 40.

Q. How long have you been in the employ of Waldron and Company, Limited? [337]

A. One year and a half.

Q. And did Mr. Hutchins,—did you overhear all the conversation? A. No, sir, I did not.

(Testimony of Frederick Lamb.)

Q. No. Did Mr. Hutchins—did you hear Mr. Hutchins say to the last witness that he was delayed in Honolulu by reason of having to get medical and surgical attention in consequence of the accident sustained by him on the steamship "Great Northern" on the 18th of February, 1916?

A. No, sir, I didn't. I didn't know anything about the accident at that time.

Q. Will you undertake to say that he did not tell the last witness that and you not hear it?

A. I didn't hear anything; I wasn't aware of it.

Q. Will you state that he did not tell him that?

A. I couldn't state. I told you just now that I didn't hear all the conversation.

Mr. DAVIS.—Exactly; that's all, Witness.

Mr. WARREN.—That's all.

The COURT.—Stand aside.

In this matter, counsel explains that Doctor Macadory is here and will be here this afternoon. We will postpone further hearing until 3:30 P. M. Take a recess until 3:30.

AFTER RECESS.

Mr. DAVIS.—I want to produce another witness, not exactly in the nature of rebuttal, but it is rebuttal testimony in a way.

The COURT.—All right. [338]

Testimony of Alfred Hackett, for Libelant (in Rebuttal).

Direct Examination of ALFRED HACKETT, for libellant, in rebuttal, sworn.

Mr. DAVIS.—What is your occupation, Mr. Hackett?

A. I am chief steward of the "Sierra," of the Oceanic Steamship Company.

Q. Is she a steamship plying between San Francisco and Sydney, Australia, via Honolulu?

A. Yes, sir.

Q. Carry United States' mails? A. Yes, sir.

Q. How many first-class passengers do you carry, Chief Steward?

A. Our accommodations are for two hundred and ten first-class passengers, eighty-three second cabin and twenty-eight steerage.

Q. How long have you been in the steamship business? A. With the Oceanic Company?

Q. Or any other company?

A. Thirty years with this company.

Q. Been thirty years with this company?

A. Yes, sir.

Q. What positions have you occupied in connection with this steamship company?

A. Storekeeper, second steward, and chief steward.

Q. And how long have you been chief steward, Mr. Hackett? A. Eighteen—nineteen years.

Q. Are you familiar with the internal arrange-

(Testimony of Alfred Hackett.)

ments of this Ocean Steamship or other steamship with reference to bathing facilities for passengers on board? [339] A. Yes, sir.

Q. And your experience has covered a period of how many years? A. Thirty years.

Q. Yes; now where are those baths situated, the shower-baths? A. Two on the port side forward.

Q. Will you please describe to the Court how they are fitted up?

Mr. WARREN.—Just a moment. I object to this, your Honor, it not being relevant and not material in the case what a particular individual vessel is fitted up with. I could go back and cite you the "Mauritania" and the "Lusitania" and a few others that are fitted up in other ways.

The COURT.—I think the objection is well taken.

Mr. DAVIS.—This is to contradict the evidence of Mr. Morris, to rebut his testimony.

Mr. WARREN.—My objection is that is confined to a particular single steamer, not to steamers generally, and if he is after an opinion on safety, I wish to cross-examine the witness.

Mr. DAVIS.—Have you been on board the "Sonoma" also?

A. I was steward for eight years.

Q. And how is she fitted up?

A. Exactly the same.

Q. Been on any other ocean steamer?

A. The "Alameda," "Sierra," "Australia."

Q. And how are they fitted up with reference to baths?

(Testimony of Alfred Hackett.)

A. The bath-rooms were different in those, no shower-baths, just two bath-rooms.

Q. Been on any other steamers on which there are bath-rooms? A. Yes. [340]

Q. That's what I mean, how many?

A. Union Steamship Company, but I never took any special notice.

Q. You have been on board and seen the bathing facilities? A. Yes.

Q. With reference as to what measures that have been taken on board the "Sonoma" as to safety in that shower-bath on board of her, just describe that to the Court.

Mr. WARREN.—The same objection, your Honor. It is not competent to describe what is on a single individual vessel. The only way in which Mr. Morris and others testified as witnesses in this case was their general familiarity with the subject by *stury,* taking vessels generally.

Mr. DAVIS.—He took the "Great Northern," your Honor.

The COURT.—I don't think it is proper to enquire as to any particular equipment except the one which is in question in this case, but I will permit you to prove what precautions are taken, if any, generally, but I don't care to confine it to one ship. What knowledge he has of any precautions taken for the safety of passengers, taking shower-baths generally.

Mr. DAVIS.—What precautions are taken on the Oceanic Line steamers which have shower-baths on?

(Testimony of Alfred Hackett.)

I am not speaking of any particular ship, but generally, what precautions are taken so as to ensure the safety of passengers using the shower-baths on board said vessels?

Mr. WARREN.—The same objection, your Honor, and further that this is going to call for more than a description of a [341] single vessels, or two or three vessels which he has named, two vessels on which there are shower-baths.

Mr. DAVIS.—Three.

Mr. WARREN.—As I recollect it, two. I would like to go further into the question of his qualifications.

The COURT.—I will admit the proof.

(Last question read.)

A. Our shower-baths are about thirty-six inches square, marble, and enclosed with a wooden latticed door, and there is a wooden grating on the bottom to protect passengers from slipping, and outside of the bath-room which—outside of the bath-room in a recess which we keep mats or bath-towels on for the safety of passengers to stop them from slipping. We have the same precautions in all of our bath-rooms. The bath-rooms have rails which passengers can hang on, and we have wooden gratings, always a bath-mat or a wooden grating to protect them so they won't slip.

Mr. DAVIS.—Mr. Hackett, look at these photographs. This is a photograph of the shower-bath on the "Great Northern." The bottom of the basin is of marble and that center piece there, what is that,

(Testimony of Alfred Hackett.)

Mr. Warren, that circle inside?

Mr. WARREN.—Nickeled brass, I think.

Mr. DAVIS.—That little round circle being of nickeled brass. How does that compare with wood as to safety?

Mr. WARREN.—Just a moment. Now, we are getting a matter of opinion, and I submit the witness is not qualified to give opinions. He is supposed to be describing what is on certain vessels he has travelled on. If he is going to [342] give opinions I am going to cross-examine him on qualifications.

Mr. DAVIS.—If your Honor wants to do that, I am perfectly willing.

The COURT.—All right, cross-examine him, Mr. Warren.

Mr. WARREN.—How many of these vessels, Mr. Hackett, the "Sonoma," "Ventura"—

A. No; the "Sonoma," "Alameda," "Sierra," the "Gelandu," when she was running out here, and the "Australia." When they first run out I made two trips in each ship and I joined the "Alameda."

Q. Did you mention the "Mariposa"?

A. I have not been on the "Mariposa," no, sir.

Q. How many of these vessels had shower-rooms?

A. The two I have been on, the "Sierra" and the "Sonoma."

Q. The "Sierra" and the "Sonoma"?

A. Yes, sir.

Q. And these two are the ones where you have made your observations as to shower-bath construction?

(Testimony of Alfred Hackett.)

A. Because I had charge of them, and I superintended the whole of that department. That comes on me naturally in the steward's department.

Q. These are sister vessels, are they not?

A. Yes, sir.

Q. Built at the same time by the same company?

A. Yes, sir.

Q. In all respects sister ships?

A. Yes, the three of them.

Q. You have also mentioned several other vessels but on none of the others have there been shower-rooms.

A. No, the shower was over in the bath-tub in the bath-room, [343] like we have in our bath-rooms.

Q. Did they have the ordinary white porcelain bath-tub?

A. The ordinary white porcelain tub; yes, sir.

Q. And you say as far as the other vessels are concerned that you may have visited you paid no particular attention to their showers?

A. No, sir; no particular attention at all.

Q. Have you inspected any vessels of the tonnage, say, of the "Great Northern," in regard to bathing facilities?

A. I have never been on board these ships.

Q. When were the "Sierra" and "Sonoma" built?

A. The "Sonoma" came out first in 1890, and the—no, the "Sierra" came out in 1890, and the "Sonoma" followed.

Q. In 1900?

A. In 1900; that was it. The "Sonoma" followed

(Testimony of Alfred Hackett.)

in 1901. They are sixteen years old, I know; sixteen years since they were built.

Q. Mr. Nymen was chief engineer, wasn't he?

A. He was on the "Ventura."

Q. Other vessels than these two, do you know of any others?

A. Yes, sir; I have been aboard the "Ventura."

Q. You have seen that, have you?

A. Yes, sir; I have been on board several times.

Q. You say you have been thirty-six years with the Oceanic Steamship Company?

A. Thirty years.

Q. And have you served on the Atlantic?

A. I have crossed the Atlantic several times.

Q. Do you know anything about the bathing equipments or [344] facilities on Atlantic steamers?

A. I haven't been on the Atlantic for thirty-five years.

Q. Have you made a study of the construction of vessels in any way?

A. No, except in my own department.

Q. Your duties in your own department are to see that the place is kept properly clean?

A. That's right, the equipment, the kitchen, the linen and so forth, and the silver.

Q. And what?

A. The equipment, the general equipment of the stewards' department, that is, the ice-house, butcher-shop, steam-rooms, kitchen, baker-shop.

Q. You are not responsible for the construction or design of the shower equipment?

(Testimony of Alfred Hackett.)

A. Not at all; no, sir.

Q. Is the responsibility on you in any way to make any changes or alterations of any kind?

A. Not without instructions from the head office.

Q. You have not studied that subject at all?

A. No, only that I know that everything is satisfactory as far as our ship has been concerned. We never had any accident or any trouble. If there is any leakage or anything of that kind, we bill to the engineers that they might rectify it, that is, steam-pipes, showers, and so forth.

Q. So that the most you could do now would be to tell us the conditions which had existed on that vessel, your vessel?

A. That's it; yes, sir. [345]

Mr. WARREN.—I submit that the witness is not qualified to pass as an expert upon construction methods or equipment or to give an opinion upon safety.

Mr. DAVIS.—As chief steward of the "Sonoma" is it your duty to see that these are kept clean and so forth? A. Yes, sir.

Q. And you have charge of that particular part of the ship? A. Yes, sir.

Q. Now, have you taken baths on board the Atlantic steamers on which you were on board?

A. I never was on the Atlantic.

Q. I thought you were on the Atlantic some years ago.

A. I crossed, but was not employed on the Atlantic.

(Testimony of Alfred Hackett.)

Q. What?

A. I was not employed, I was a passenger.

Q. You were a passenger on Atlantic steamers?

A. Yes, sir.

Q. Know anything about the baths there?

A. Very little, the ordinary bath, but that is nearly forty years ago.

Q. But you have been on other steamships, also, you have visited other steamships within recent years, plying in the Pacific, have you not?

A. Yes, sir.

Q. Which ones?

A. Several, in the "Sydney," the "Mongolia" and several others. I can't just exactly think of the names.

Q. How many?

A. I just wanted merely to see the steward and pass the time [346] of day with him.

Q. How many, Mr. Hackett?

A. I suppose a half a dozen.

Q. Did you go to see the bath-rooms on these vessels? A. It didn't appeal to me,

Q. But at all events you have been thirty years in this Oceanic line?

A. Yes, sir.

Mr. DAVIS.—Now, I submit the witness is competent to give an opinion and to compare the two bath-rooms just like he did with other ships, he opened the door for it wide, Mr. Warren did, he wanted to know how other ships are fitted out, your Honor.

(Testimony of Alfred Hackett.)

The COURT.—You need not argue the matter. I am going to hear the testimony.

Mr. WARREN.—Allow me to note the ruling as error, your Honor.

The COURT.—Exception allowed.

I permit him to make a comparison as to safety between a bath with and without a wooden flooring and mats that go with them.

Mr. DAVIS.—As in those photographs.

Mr. WARREN.—That is objected to.

The COURT.—Read the question.

(Last question read as follows: By Mr. DAVIS.—"Mr. Hackett, look at these photographs. This is a photograph of the shower-bath on the 'Great Northern.' The bottom of the basin is of marble and that center piece there, what is that, Mr. Warren, that circle inside?" Mr. WARREN.—"Nickeled brass, I believe." Mr. DAVIS.—"That little round [347] circle being of nickeled brass. How does that compare with wood as to safety?")

Mr. WARREN.—That question calls for his opinion, "How does it compare?" I state further that the question does not correctly state or describe that bath there with reference to it having a marble floor, it being porcelain, and I object.

Mr. DAVIS.—I will ask to amend the question, it being porcelain. I ask your Honor's ruling.

Mr. WARREN.—I further object to the question on the ground that it does not appear there is sufficient in the knowledge of the witness in stating to him any question or giving any photographs as to

(Testimony of Alfred Hackett.)

enable him to give an expert opinion of the safety of the bath shown in that photograph.

The COURT.—I think that might be the opinion of any witness who might have knowledge of the facts from his experience, and therefore will allow him to state his—state the comparison between the two as to safety.

Mr. DAVIS.—Now, from the question, Mr. Hackett, as put, from the question as put and from the photograph, how do the two baths compare with reference to safety?

Mr. WARREN.—Will your Honor pardon one more interruption? It does not appear that the witness has ever seen or heard of a bath such as is shown in the picture there.

The COURT.—A bath such as is represented in the picture.

A. Your Honor, our baths are exactly a facsimile of this one, exactly, the only difference being for the safety of the passengers, we keep a wooden grating on top of this marble and on the outside here in this partition here we also keep [348] a wooden grating, and we have a bath-towel so that a passenger stepping out from this bath into the dressing compartment is not liable to slip, and there is a handle to hold on.

The COURT.—Where?

A. Right in the bath—outside the bath-room when he comes out from the shower, and there is a wooden door, a lattice door enclosed there, which is impos-

(Testimony of Alfred Hackett.)

sible for him in case of bad weather to be thrown out of this shower-bath.

Mr. DAVIS.—Then how do the two of them compare as to safety?

Mr. WARREN.—I object to the question, it calls for an opinion of the witness.

Mr. DAVIS.—I submit it is proper and competent testimony, without further argument.

The COURT.—As a matter of fact, the witness has practically answered the question already, I overrule the objection.

Mr. WARREN.—Which we assign as error, your Honor.

Mr. DAVIS.—Answer the question, please, now.

A. In my opinion and my experience, a bath of this description without any protection for a passenger, that is, without any wooden grating or a foot bath-towel to stand on, he is liable to slip. There is evidently no handle or anything you can get hold of here, and we protect our passengers by having a wooden grating bath-mat, and also on the outside dressing-room when he comes out of the shower he stands on this platform of wood with a bath-towel on it to prevent him from slipping while he is [349] wiping himself and dressing himself.

Mr. WARREN.—I object to that as opinion.

The COURT.—It is a question of whether or not this bath is safe.

Mr. DAVIS.—Is that bath as described to you by me as is that as represented in the photographs, do you in your opinion consider that safe?

(Testimony of Alfred Hackett.)

A. Not in this condition as it is now here, certainly not.

Mr. DAVIS.—Take the witness.

Cross-examination of ALFRED HACKETT.

Mr. WARREN.—Mr. Hackett, how long have you used these wooden gratings on the floor?

A. Ever since I knew the Oceanic Steamship Company.

Q. Always?

A. Always; yes, sir. Go right down aboard the ship now and you will see them in every bath-room and in the shower-baths.

Q. Do you know of any time that passengers have used these shower-rooms without this grating or flooring?

A. Not to my knowledge. Of course, I am not there when a passenger is bathing, but there is a man to look after it and he is cautioned to keep them in their places.

Q. So far as your experience is concerned these gratings have always been used? [350]

A. Yes, sir.

Q. Do you know of any passengers taking a shower without these being put down?

A. They are always down. If they are standing up in the corner the boy puts them down in when the passengers calls for showers.

Q. What experience have you had on vessels then where gratings were not used? A. Sir?

Q. Have you had experience on any vessel where a wooden grating was not on the floor?

(Testimony of Alfred Hackett.)

A. No, I told you I only been on the Oceanic Steamship Company and they insist it is part of my duty to look after that.

Q. So you have never known of a case of a person to slip on your vessels in these shower-rooms with the boards being up? A. No, sir.

Q. Then what practical experience or observation have you had of the use of these shower-rooms without boards,—any at all?

A. We never use them without boards.

Q. How, then—on any of these other vessels you have inspected you have not seen shower-rooms of that kind?

A. No, I told you before I had not, the bath-rooms or anything else on board a ship does not interest me at all.

Mr. WARREN.—That is all.

The COURT.—I would like to understand the witness exactly. If I understood you, you said that the shower-baths on the ship you are on is exactly like that? [351]

A. Yes, sir; almost facsimile to this.

Q. Basin and all?

A. Yes, sir; only our pipe comes up here instead of this.

Mr. WARREN.—The witness is indicating a pipe going up the back wall instead of the side wall.

A. Yes, it comes up from the back. Ours is not quite as deep as that, your Honor; the basin is not quite as deep. Then we have a wooden grating that fits snugly in that.

(Testimony of Alfred Hackett.)

The COURT.—A wooden grating?

A. Yes, sir; a wooden grating, and it fits in there for the safety of the passenger. That is marble, and sometimes when you get your foot in salt water you are going to slip, you can't help it, particularly in bad weather, and we have a door that closes here, a wooden door, that protects the passenger from falling out in case the ship pitches.

Q. To prevent slipping, your baths have wooden gratings in the bottom?

A. Yes, sir; and when he steps out of here into the dressing-room there is another long grating, there is a long grating and on that grating is a bath towel or a bath mat, and if the steward can't get a bath mat he lays a bath towel and the passenger stands on that to dry himself and dress himself to prevent himself from slipping. Our floor is marble also, that's the reason we use these things.

Q. Mr. Hackett, how long has that device been in use, did you say, that mat? [352]

A. Sixteen years, since the ships came out, your Honor.

The COURT.—That is all.

Adjourn court until 10 o'clock to-morrow morning. [353]

In the United States District Court, in and for the Territory of Hawaii.

CLINTON JAMES HUTCHINS,

Libellant,

vs.

The American Steamship "GREAT NORTHERN," etc.,

Libellees.

Honolulu, H. T., Tuesday, February 27, 1917.
10:00 A. M.

Testimony of Dr. Robert J. McAdory, for Libelees.

Direct Examination of Dr. ROBERT J. McADORY, for libellees, sworn.

Mr. WARREN.—Give your full name, please, Doctor.

A. Robert J. McAdory.

Q. Your age? A. Forty-five.

Q. Your present residence? A. Kamuela.

Q. On the island of Hawaii? A. Hawaii.

Q. What is your business or profession?

A. Physician and surgeon.

Q. How long have you been a physician and surgeon? [354] A. Since 1897.

Q. Since 1897? A. About twenty years.

Q. In what states have you been licensed to practice medicine and surgery?

A. The State of California, Arizona, and in the District of Columbia and the Territory of Hawaii.

(Testimony of Dr. Robert J. McAdory.)

Q. What experience have you had as a surgeon or doctor on board of ocean-going steamships?

A. During intervals during the past three years I have been surgeon with the Toyo Kisen Kaisha and the American Hawaii.

Q. The American-Hawaii Steamship Company?

A. The American-Hawaii Steamship Company and the United Fruit Company out of New York, and the Great Northern Pacific Steamship Company.

Q. Will you name some of the vessels on which you have served as a doctor?

Mr. DAVIS.—I submit that it is incompetent, irrelevant and immaterial on which vessels he served. There must be an end to this case, your Honor, and it seems to me that it takes up time unnecessarily, as I said before.

The COURT.—Well, we will soon be through with it.

Mr. DAVIS.—I submit he has questioned far enough. He is shown to have graduated and licensed to practice in these states—

The COURT.—He is entitled to give his experience fully. I overrule the objection. Go ahead, Doctor.

A. During my experience in the army,—I served on the hospital ship "Relief" as one of the surgeons, and on the transport "Valencia," and on the transport "Grant," and on the transport [355] "Logan." Subsequently on the "Nippon Maru" of the Toyo Kisen Kaisha, and on the American-Hawaiian

(Testimony of Dr. Robert J. McAdory.)

steamer "Honolulan" between San Francisco and New York via the Panama Canal, when she was in the passenger service, on the "Sixola" of the United Fruit Company, sailing to Cuba and Central America, and last on the "Great Northern," sailing between San Francisco and Honolulu.

Mr. WARREN.—You mentioned service in the army; how long were you in the service?

A. About four and a half years.

Q. In the month of February of 1916 were you the surgeon on board the Great Northern Pacific Steamship Company's steamer "Great Northern"?

A. I was.

Q. When were you engaged to serve on that vessel?

A. I don't know the exact dates, but it was a few days prior to her first sailing, on her first series of voyages down here.

Q. On the Honolulu run?

A. Yes, on the Honolulu run.

Q. Did you serve on that vessel during her entire run to Honolulu? A. I did.

Q. Before she was put back on the coast run?

A. Before she was put back on the coast run.

Q. Do you know, Mr.—oh, pardon me. I want to refer further to the matter of your engagement and ask you if you will please state from your own personal knowledge the arrangement which was made between you and the steamship company [356] when you were engaged, and what investigation was made, to your own knowledge, by the company's

(Testimony of Dr. Robert J. McAdory.)

representative as to your qualifications and experience.

A. I made application for the position of physician and surgeon on the S. S. "Great Northern" when I learned she was going on that run, and the application was made to the marine superintendent.

Q. Who was that?

A. C. W. Wiley. I saw Mr. C. W. Cooke, the marine superintendent of the American-Hawaiian Company in San Francisco, and I showed Mr. Wiley letters from the American-Hawaiian Company, the Toyo Kisen Kaisha and the Medical Society of the State of California. I was then appointed, Mr. Wiley saying he would try me out for one trip. We are only appointed for one trip, therefore we signed on, and at the expiration of that trip our service terminated and we have then to re-sign on after that. Each trip makes a distinct ending of our employment. The assumption is at the end of your voyage you sign on for subsequent trips.

Q. Where did you first see Mr. Wiley about that matter?

A. I saw him on board the S. S. "Great Northern" in the chief engineer's room.

Q. Who else was present at that time?

A. The chief engineer.

Q. Mr.? A. Mr. John Morris.

Q. When did you show Mr. Wiley the letters and certificates you have referred to?

A. That was at the Palace Hotel. [357]

Q. Please tell us first,—pardon my interrupting

(Testimony of Dr. Robert J. McAdory.)

you,—just what transpired at that meeting when Mr. Morris was present, how much was said there.

A. When I first saw Mr. Wiley he was in close consultation with Mr. Morris upon some ship matters, and was very busy. He said he had not taken the matter up before, at that time there were several applicants and he would consider it later on. My interview with him then lasted scarcely a minute. I waited several days and then called again on Mr. Wiley. About the only place he could be seen was down on the dock, at the ship. I saw him again in Mr. Morris' room, and asked him if he had done anything about it, and he said he would take the matter up that afternoon if I would come to see him at the hotel and discuss it. I met him about five o'clock in the afternoon at the Palace Hotel and showed him these letters I had, and he said, "Well, I will try you out for one voyage, consider the matter closed." That conversation lasted only, say, long enough to take him to say what I have said, and to read these letters which I showed him.

Q. Have you with you these letters which you showed him at that time?

A. I think I have some of them.

Q. Will you produce them, please?

A. I think some of my things have gotten misplaced. I think those are all. How many letters are there there, Mr. Warren, three?

Mr. WARREN.—Three.

Q. Where was it you showed these papers to Mr. Wiley, at the [358] ship or at the hotel?

(Testimony of Dr. Robert J. McAdory.)

A. At the hotel, the Palace Hotel.

Mr. DAVIS.—I object to the introduction of this letter.

Mr. WARREN.—Have you any objection, Doctor, to me filing these and later withdrawing them and returning them to you?

A. None whatever.

Mr. WARREN.—I offer in evidence, your Honor, three letters which have been produced by the witness which I will identify as follows:

The first is a letter on the paper of the Toyo Kisen Kaisha, addressed To Whom It May Concern, dated San Francisco, November 11, 1914, and signed by W. H. Avery, assistant general manager.

The second, a letter on the paper of the Medical Society of the State of California, dated at San Francisco, November 12, 1914, addressed To Whom It May Concern, and signed by Philip Mills Jones, Secretary and Editor.

The third, a letter on the paper of the American Hawaiian Steamship Company, dated August 25, 1915, addressed, To Whom It May Concern, and signed by E. Anderson, as master of the steamer "Honolulan," as being the documents which were submitted by the Doctor to the steamship company at the time of his engagement indicating the qualifications which were taken into consideration when the engagement was made.

Mr. DAVIS.—I presume these signatures are all right but they have not been proven in the first place, and in the second place the question involved in this

(Testimony of Dr. Robert J. McAdory.)

case is what [359] treatment the Doctor gave Mr. Hutchins. It doesn't make any difference if he had the skill and knowledge of the Mayo brothers if he didn't give any attention to the passenger on the steamer. I don't know what this means, this letter doesn't say anything about his qualifications, doesn't pass on it in any way, shape or form. So far as the Medical Society is concerned, they may be the only ones who know anything about his qualifications. The letter signed by Mr. Avery, manager of the Toyo Kisen Kaisha, he would have, no—I don't suppose that he ever treated Mr. Avery, and I don't suppose Mr. Avery knew anything about him, he is not a medical man, so how can he judge of the qualifications of Doctor McAdory. It is absolutely impossible, so that the evidence would be incompetent, irrelevant and immaterial from that standpoint as far as Mr. Avery is concerned. As far as the American Hawaiian Steamship Company is concerned, and Anderson, the master, I don't know what technical knowledge he could have unless he saw him perform operations and do something on the trips. He says, "Your services are entirely satisfactory and only terminated when the company discontinued,"—it's a nice letter, all right, as far as that goes, but it appears to me that he wouldn't be competent to pass upon the qualifications of Doctor McAdory and for this reason I submit the evidence is incompetent, irrelevant and immaterial, not tending to prove or disprove any of the issues in this case, and the signatures have not been proven.

(Testimony of Dr. Robert J. McAdory.)

The COURT.—There is no need to argue the matter. Doctor [360] McAdory testifies these are the same letters that he showed to Mr. Wiley at the time the contract was made to employ him and other matters on which he acted. They affect the question of whether or not he exercised due care in the employment of Doctor McAdory. I will admit the testimony on that point.

Mr. WARREN.—That is the purpose of these letters?

Mr. DAVIS.—To which ruling I respectfully except.

The COURT.—Exception allowed.

Mr. WARREN.—I would like to ask you, Doctor, which or how many of these three letters were shown by you to Mr. Wiley? A. All of them.

Q. You personally know all of these gentlemen who have signed these letters? A. Yes, sir.

Mr. WARREN.—I offer them in evidence.

The COURT.—The letters will be admitted in evidence.

(Marked Libellees' Exhibits 2, 3 and 4.)

Mr. WARREN.—Do you know the signatures of these different gentlemen, Doctor?

A. Yes.

Q. You were a moment ago indicating a desire to speak to me; was that in connection with these letters? A. Yes.

Q. Can you state anything further concerning these letters which you have not stated, which has to

(Testimony of Dr. Robert J. McAdory.)

do with the arrangement between you and Mr. Wiley?

A. I don't know that this is relevant or not. Judge Davis spoke of Captain Anderson, for example, not being [361] qualified.

Mr. DAVIS.—It's incompetent, irrelevant and immaterial, and I object to the evidence.

Mr. WARREN.—As master?

Mr. DAVIS.—As master, yes.

Mr. WARREN.—Did Mr. Wiley tell you how many applicants there were for that position?

Mr. DAVIS.—I object to what Mr. Wiley told him.

The COURT.—That is hearsay.

Mr. WARREN.—Directly, if your Honor, please, in the matter of the engagement.

The COURT.—It would not directly affect the question.

Mr. WARREN.—I submit it would, your Honor, if there were two, three, or four applicants and this man was chosen, it would indicate the consideration of more than one person, and indicate the consideration of at least three persons.

The COURT.—I think it is immaterial.

Mr. WARREN.—Very well, your Honor. The testimony that there were several went in with the objection.

Q. Do you know Mr. Hutchins, the plaintiff in this case? A. I do.

Q. How long have you known him?

A. I think our acquaintance began about 1901,

(Testimony of Dr. Robert J. McAdory.)

somewhere—1901 or 2, when I was living in Honolulu.

Q. What has been the nature of your acquaintance?

A. Well, it has not been an intimate acquaintance; it has been a friendly acquaintance.

Q. How frequently would you see him? [362]

A. That I can't remember definitely. In a place the size of Honolulu ten years ago *and* man would frequently meet their friends about the city, but as to how frequently I—well, my answer would be indefinitely. I subsequently would occasionally see him in San Francisco.

Q. Did you know him—I withdraw that. In your acquaintance with him by what name would you call him?

A. Well, the familiar name we called him was Hutch.

Q. Would you address him as Hutch in your conversation? A. Yes, sir.

Q. Do you recall an occasion when he sustained an injury in the bath-room of the "Great Northern" in February of last year? A. I do.

Q. Please state your first connection with that, when and where you saw him and what you found.

A. It was in the morning, I don't recollect the exact hour, but it was before breakfast, I was called to the bath-room that somebody was injured there. When I arrived I found Mr. Hutchins sitting on a stool gasping and breathing heavily and apparently suffering a good deal of pain. I made no examina-

(Testimony of Dr. Robert J. McAdory.)

tion of him there, but I learned from some bystander or bystanders that he had slipped in the shower-bath and had fallen on his shoulder, so I got him in his room, which was near by, across the alleyway, and I do not recall who was present with the exception of his wife, she was very much shocked when he came in to find he had fallen, and we got him in bed, and about that time [363] another call came for me, a young woman who had been very ill on board, at the point of death, and after getting Mr. Hutchins in bed I first administered a grain of codeine, which in some measure alleviated his pain. He was suffering at the time from some surgical shock.

Q. In what form did you administer that?

A. In little tablets, a half a grain each. Then I went to see this young woman, and found out that her condition was not such that I could leave her very shortly and went back. An interval of probably ten minutes may have elapsed. I returned to Mr. Hutchins' room and found him sitting on a little settee in his room, his wife assisting in dressing him. He had just about got his outer shirt on at the time I arrived and he remarked that he was rather uncomfortable lying down, that he would be more comfortable sitting up, something to that effect, and I at the time gave him a slight examination of the shoulder. I rotated the arm, having in mind the possibility of a fracture there, but owing to the voyage being at the close, or near the close, at that time only a couple of days more or something

(Testimony of Dr. Robert J. McAdory.)

like that, and he was suffering a good deal at the time, I did not care or thought I ought not to subject him to the necessary manipulation and ascertain the absolute condition of the joint at the time, inasmuch as he would shortly be in Hilo, where someone else could take charge of the case, and I knew that whoever that would be he would have to go through the same formality and subject the patient to [364] additional manipulation and unnecessary suffering, and inasmuch as I was able to rotate the arm about in the socket I realized no great harm could come in allowing him to wait for a couple of days and then have the advantage of all that science could afford him in the way of an X-ray picture. Whoever the other doctor was he would first get a picture and then ascertain what the real condition was and then he would do what was necessary. I only thought inasmuch as—from the examination I had made, that he would be reasonably comfortable and safe with the arm in a sling, and being rather a stout man and just coming out from a cold city I did not care to bind him up these last two days and give him all the physical discomfort and such, and that the short time that would elapse would not cause any injury or interfere with subsequent treatment and—

Q. Let me ask you right there, what in your opinion, would be the effect, if any, in allowing the arm to go without immobilizing it for two days?

A. That would all depend upon the character of fracture. If it was an impacted fracture where the bones would act as a splint for themselves, the ends

(Testimony of Dr. Robert J. McAdory.)

being dovetailed into each other, and by that dovetail immobilize it, that is, immobilize the broken ends, there could not be any injury, providing he was leading a quiet life, not subject to any jolts or things of that character, while, on the other hand, if the ends were asunder, it would not be wise to let the broken bone go without immobilizing it [365] because the jagged ends would be tearing into the soft parts at every movement.

Q. Did you at that time, or could you detect any fracture at all in the nature of a break as defined from impact, any broken or split bone?

A. Well, I detected some little clicking that is common in joints due to the little sesamoid, that apparently was the little sesamoid bones that surround the glenoid cavity of the scapula, that is, every joint as we get along in life, there is a little cartilaginous rim there, earlier in life that becomes deposited with lime salts and forms sometimes a bony rim around the rim of the scapula so that—

Q. Well, Doctor, did you move that arm, manipulate it sufficiently to get any definite opinion or clean-cut belief in your own mind at the time—

Mr. DAVIS.—I submit that is leading.

Mr. WARREN.—I have not finished my question.

The COURT.—Don't answer the question until he finishes it. He has not finished it yet. Read the question as far as the interruption goes.

(Last question read.)

Mr. WARREN.— —as to what the injury was?

Mr. DAVIS.—Clearly objectionable, your Honor.

(Testimony of Dr. Robert J. McAdory.)

Just think of that, he is telling him just what to say. He is suggesting an answer.

The COURT.—He can answer either way. Overrule the objection.

Mr. DAVIS.—To which I respectfully except. [366]

The COURT.—Allowed.

Mr. DAVIS.—And assign the same as error.

The COURT.—Answer the question, Doctor.

Mr. WARREN.—You can answer that question yes or no.

A. Did I make?

Q. Did you make such a manipulation or examination as resulted in the belief in your own mind at the time as to what the matter really was, or did you not know what the matter really was?

A. It was not entirely clear in my own mind what the matter was, and for that reason I recommended at the time that as soon as he arrived at Honolulu that he would—he mentioned that he would go to someone and have an X-ray, said he would go and see his friend Doctor Wood, and I said, "That's right; go to your friend, Doctor Wood, and have an X-ray taken and find out definitely what the trouble is."

Q. How long did you remain with Mr. Hutchins when you returned to him that time after attending that call for the other patient?

A. Possibly not longer than five minutes; I saw that he was being dressed.

Q. What did you do?

A. I saw that he was being dressed there and I did

(Testimony of Dr. Robert J. McAdory.)

not wish to detain him any longer, inasmuch as I had given him the examination I did, so I left him in order that his wife might assist attending with the dressing of him. I then went on down to my breakfast and before I had finished Mr. Hutchins appeared and passed by the head of my table and took his seat at the table adjoining, where he was assigned [367] and made some casual remark to me as he passed that he was still on deck, or something to that effect.

Q. What?

A. That he was still on deck, or something to that effect, that he was about, or able to be about.

Q. How often after that did you see him on the rest of the voyage?

A. Well, I saw him several times every day.

Q. Where?

A. On deck sitting in his deck-chair or taking a little exercise around the deck with his wife.

Q. Speaking, now, of the same day on which the accident occurred, can you recall now about how many times you saw him before night?

A. I know I was on deck a great deal, among the passengers. Those that were sick I would stop and chat with them and ask their condition.

Q. Do you know whether or not you did meet him on deck before night, of that day?

A. Well, that is—I cannot answer that in the absolute affirmative. I know that I seen him on deck several times subsequent to the accident.

Q. Did you see him that night?

A. We had a trial on board, a mock divorce, in

(Testimony of Dr. Robert J. McAdory.)

which Mr. Hutchins very ably conducted the case as the judge, and afforded the passengers a great deal of amusement. It lasted a half an hour, I suppose, something like that.

Q. A little louder.

A. The trial lasted about a half an hour, I should judge. That took place after dinner. [368]

Q. Did you notice Mr. Hutchins' actions during that trial? A. I did.

Q. Will you please describe them.

A. Well, he was more or less the center of the amusement of the trial because of his having to sustain or deny the objections, and his playing upon the desk with an improvised gavel for order, and calling for order, and such things as that.

Q. Were you able to detect any indication of pain or suffering being sustained by him during that time, that trial?

A. No, I cannot say that I did.

Q. Was your attention attracted to him particularly?

A. Only so far that I noted that he had his arm held up in a sling, by a large silk handkerchief, and gave it very good support.

Q. Did you after the accident make any calls on him after returning to his room that first time to see how he was getting on or give him attention?

A. After I had examined Mr. Hutchins the last time I saw him in his room the morning of the accident, I advised him to *to* immediately and have an X-ray taken upon his arrival, I did not follow up the

(Testimony of Dr. Robert J. McAdory.)

case very closely, I did not go to his room. The only time I would see him would be either at his meals which he attended regularly, or up on deck, occasionally passing the time of day with him and asking him how he felt.

Q. Now, just give us the substance of any one of those conversations you can recollect.

A. Well, those conversations were very very short. As I [369] say, I passed the time of day, and how does your shoulder feel, and his answer would be one that would always lead me to believe that he was not suffering any unusual pain,—

Q. Without stating your belief from what he said, give us the substance of what he said as nearly as you can recall it, if you cannnot recall his words, then the substance.

A. Well, the substance would be to the effect that he was fairly comfortable.

Q. Did you inquire into that point as to whether he was suffering any particular pain? A. Yes.

Q. What was the conversation about that?

A. Well, it would be difficult for me to give a definite answer to some actual remark that might be passed. The substance of his remark would be to the effect that he was suffering no great pain. If he had been, I would certainly have suggested—

Mr. DAVIS.—I object to what he would have done. What he did do is what we want.

The COURT.—I sustain it.

Mr. WARREN.—After arriving in Honolulu, did you take any further interest in Mr. Hutchins' case?

(Testimony of Dr. Robert J. McAdory.)

A. I saw Mr. Hutchins several times after arrival, but particularly to get the ship's report which I had deferred taking until I could learn of the results of the X-ray, the reports we take of all accidents that occur on board, whether they occur among the passengers or the crew, and I met Mr. Hutchins one morning, I cannot say definitely what day it was, but it was probably the second day after our arrival, I met him at Hall's hardware store, and he [370] said, "We will walk up to the Commercial Club where it is cool," and we walked up there and I got the data necessary for my report, and then I made arrangements with him whereby I could meet him at Doctor Wood's subsequently in order to see the plate, and I went there one day and he had already arrived at Doctor Wood's, and the doctor had his shirt off and was giving him some attention, and I saw the plate and also saw a portion of Mr. Hutchins' chest and arm that was exposed and was not covered by his bandages. He was quite ecchymotic, that is, an effusion about his chest and shoulder—

Q. Doctor, drawing your attention back again to the time of the accident, what indications were there, if any, on the outside of his body visible to the eye as to what happened? Describe his condition as you saw it.

A. There was no deformity displayed.

Mr. DAVIS.—No what?

A. Deformity, no objective symptom in that direction. I think there was a slight abrasion on the

(Testimony of Dr. Robert J. McAdory.)

elbow. His symptoms at the time were almost entirely subjective.

Mr. WARREN.—Just what do you mean by that?

A. Objective symptoms are those we plainly see. Subjective symptoms are those we have to take the patient's word for it, such as pain; that is a subjective symptom.

Q. And when you saw his shoulder in Doctor Wood's office as you have stated, how did the physical appearance compare with the time you saw it before?

A. Well, he was very much bruised over the chest on that side and over the arm. That was the only difference. [371] There was some swelling, a slight swelling.

Q. In the matter of manipulation of the injured part is there any difference in the degree of pain or degree of—well, just say pain—to a patient which varies according to the size of physical condition of the patient?

A. Well, the question of pain as manifested in a patient depends upon several conditions, the temperament of the patient, the amount of injury he sustains, the health of the patient at the time, those conditions we have to take into consideration, also the amount of surgical shock which might have been the result of the injury in the first place. Surgical shock does not continue any great length of time, but it lasts sometime .

Q. I don't think you understood my question. I will put it another way. Is there any difference in

(Testimony of Dr. Robert J. McAdory.)

the amount of manipulation which must be made in the case of a heavily built person to a slightly built person in order for the doctor to determine what is the matter?

A. It is more difficult to make a diagnosis, a definite diagnosis in the case of a fracture in a fat person than in a person that is not fat.

Q. Why?

A. Because of the soft parts that overlie. If in the case of a person with a good deal of adipose tissue overlying the injury it requires deeper pressure and more severe manipulation to ascertain positively what the condition is.

Q. In which of these classes would you place Mr. Hutchins?

A. Well, Mr. Hutchins is a little inclined to be obese.

Q. Can manipulation be made with ordinary satisfaction without [372] an anesthetic in the case, we will say, of a fractured shoulder?

A. Yes, if the surgeon is cruel enough and the element of human sympathy does not come in.

Q. Then you would say, it depends upon the surgeon, not the patient?

A. It is always best in obscure fractures or dislocations to anesthetize the patient—

Mr. DAVIS.—That is not in answer to the question.

The COURT.—The answer is germain to the question; it relates to the question.

Mr. DAVIS.—I move that it be stricken out on the

(Testimony of Dr. Robert J. McAdory.)

ground that it is not responsive to the question.

The COURT.—Overrule the objection.

Mr. DAVIS.—To which ruling I respectfully except and assign the same as error.

The COURT.—Exception allowed.

Mr. WARREN.—Continue, Doctor; you were speaking of anesthetics.

A. I was stating to the effect that it makes it much easier to manipulate a broken bone when the patient is under an anesthetic; the muscle fibre is more or less in a state of contraction, and there is the jagged ends of the bone irritating it and it becomes more tense and contracts, and by the anesthetic we relieve that tenacity and then the muscles relax and we can make our manipulations more easily. We haven't the elements of the patient's cries to disturb us, and when the fracture is ascertained then the subsequent contractions do not need to be so strong to pull the bones together.

Q. As a matter of practice, what is the best known method for [373] a physician to determine whether there is a fracture and what it is?

A. Well, we have the ordinary symptoms of fracture. In the usual diagnosis of a fracture we try to get at the cause, that is, what was the force that brought about the injury in the first place. It gives us some idea of what might be expected, and if it happens to be in the arms or legs or those members which have mates in the body, we then compare the injured with the uninjured one to detect more clearly the deformity.

(Testimony of Dr. Robert J. McAdory.)

Q. Drawing your attention more particularly to this case, where you cannot satisfactorily diagnose the case by manipulation or physical inspection, what is the manipulation?

A. Of course by that term "manipulation," is rather a general one. You may take two ends of a bone in your hand, that is, the member, whatever it is, on the leg, and you may detect what we call a grating or crepitus of these bones. On the other hand, we need not do that. We can sometimes get very reliable symptoms by an upward pressure, by taking, if it is an arm, and press up on that arm. If we elicit pain by that pressure it gives us a very good clue to the situation and it is one symptom that is gone about, that is taken advantage of by most physicians who have to contend with fractures, and it is the one which I used in my examination of Mr. Hutchins. It has the advantage that you don't really twist about the bone very much; you pull up.

Q. Have you an X-ray outfit on the vessel? **[374]**

A. No.

Q. Did you consider in this case the advisability of giving an anesthetic to make the examination?

A. In this case I did not, because of the proximity of the X-ray to the patient, to get more definite results. You cannot in fractures of that character have an absolute definite and true opinion of the condition. That is generally conceded by the leading surgeons of the country, Professor Stinson, for example.

(Testimony of Dr. Robert J. McAdory.)

Q. Is it usual to administer an anesthetic to a patient at sea? A. Oh, yes.

Q. What is that? A. Yes, indeed.

Q. Could that be practically done by the same physician who is making the examination?

A. It would be a very dangerous procedure, and a man would likely lose his license if he tried it.

Mr. DAVIS.—I move that it be stricken out as not responsive to the question.

The COURT.—I didn't catch what the answer was. What was your answer? A. The last, Judge?

Mr. DAVIS.—Yes, what did you answer?

A. Well, to the effect that he would probably lose his license. That is what he wants.

Mr. DAVIS.—Yes, that is what I want, too. He added that himself.

The COURT.—Your first answer was that it would be a very dangerous proceeding?

A. A very dangerous proceeding; that was practically the end, **[375]** and I afterwards made the statement that he would probably lose his license.

Q. If he would administer an anesthetic on the ship?

A. I should have continued by saying that very unfavorable results would follow,—death, for example.

The COURT.—I don't see any objection to the testimony. Overrule the objection.

Mr. DAVIS.—Exception, your Honor.

The COURT.—Exception is allowed.

A. I might add further that of course there are

(Testimony of Dr. Robert J. McAdory.)

conditions, it may be absolutely necessary that we employ a layman to administer the anesthetic; there may be no means of getting around it.

Mr. WARREN.—That would be a matter of extremity?

A. That would be a matter of extremity.

Q. Now, Doctor, do you know that shower-room in which Mr. Hutchins fell? A. Yes.

Q. Have you made any examination of that?

A. Yes.

Q. Did you see it after the accident on that day?

A. Yes.

Q. Will you please state to the Court what facilities, if any, there were in that room for a passenger to hold himself in that shower-room to prevent himself from slipping or falling?

A. The sides of the shower, the marble sides, are about on inch thick, and inside of the bath proper, the little compartment, there is a grab handle, at the rear side of the wall. **[376]**

Q. Do you know whether that grab-handle was there on that day? A. Oh, yes, it was.

Cross-examination of Dr. ROBERT J. McADORY.

Mr. DAVIS.—You had plenty of cotton there and other materials for binding up Mr. Hutchins on that date. The accident happened on February 18, 1916.

A. I had.

Q. Yes, and you had also a hospital-room on board the ship? A. Yes.

Q. Yes, and you had surgical instruments of all

(Testimony of Dr. Robert J. McAdory.)

kinds there, splints and everything necessary in case of accident?

A. Yes, not all kinds, though, there were ordinary —a liberal amount, not all kinds.

Q. You had a liberal supply?

A. I didn't have all kinds, though.

Q. You had a liberal supply, eh? A. Yes.

Q. After you had a look at Mr. Hutchins' arm in the stateroom you told him he had sustained a bruise, did you not?

A. I told Mr. Hutchins at the time there was—

Q. Just answer my question, please, Doctor. It is an unpleasant duty to cross-examine you, but I have to perform that duty. Now, I asked you if you told him,—say yes or no,—did you tell Mr. Hutchins that he had sustained a bruise; either yes or no.

A. I don't think I used the term bruise.

Q. Will you swear you did not?

A. I think I used the term "contusion." **[377]**

Q. Will you swear you didn't use the word "bruise," positively?

A. No, I won't swear whether I used the word "bruise" or "contusion."

Q. Now, if you had immobilized that arm at the time after the accident happened when you visited Mr. Hutchins after you came back from your original call that you made, wouldn't the treatment have been all right, even if it had been a bruise, it wouldn't have done any harm? A. No.